TECHNICAL MEMORANDUM
2000 SITE INVESTIGATION

BASF RIVERVIEW SITE
RIVERVIEW, MICHIGAN

Prepared for
BASF Corporation
Wyandotte, Michigan

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URS

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TABLE OF CONTENTS

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

TABLE OF CONTENTS

LIST OF APPENDICES

This Technical Memorandum (Tech Memo) is in response to Michigan Department of Environmental Quality (MDEQ) request to evaluate the groundwater surface water interface (GSI) pathway at BASF Corporation's (BASF's) Riverview property (Site). MDEQ requested that the evaluation be completed in order to determine the interim response alternatives for eliminating the GSI pathway. Malcolm Pirnie (MP) reviewed the existing data from previous investigations and determined that the data were insufficient for eliminating the GSI pathway. As a result, MP prepared a Site Investigation Work Plan dated June 26, 2000 (Work Plan) to address data gaps for this pathway. Following its review, BASP chose to implement the Work Plan. URS was retained by BASF to implement this Work Plan. MDEQ utilized MP as an oversight contractor. The field investigation completed in July and August 2000 is referred to as the 2000 Site Investigation in this Tech Memo.

The contents of this Tech Memo are outlined the Technical Memorandum Guidance provided as Appendix A of the Work Plan. In general, this document provides a brief history of the site and a summary of the work performed during the investigation. As appropriate and applicable, this document describes deviations from the activities outlined in the Work Plan.

The Site is located north of the intersection of Riverside Drive and West Jefferson Avenue (18099 West Jefferson Avenue) in Riverview, Michigan, Wayne County. Figure 1 shows the general location of the Site. The Site is 30 acres, of which 27 acres are land and 3 acres are in the Trenton Channel of the Detroit River. Prominent site features are shown on Figure 2.

During the summer of 1998, BASF discovered an area of distressed vegetation on the eastern part of the property. The area was located east of the North Cap and west of a partially completed slurry wall. The area also displays an elevated water table. Soil samples from the area had elevated concentrations of salts and an elevated pH. These results were shared with the MDEQ and led to a 1999 field investigation and completion of an Engineering Evaluation / Cost Analysis (EE/CA) report dated December 1999.

The following section of this Tech Memo focus on deviations from the activities described in the Work Plan. Unless otherwise stated, the activities were completed as described in Section 4.0 of the Work Plan.

A site survey was completed in order to complete an accurate, up-to date base map showing the location of significant site features. Urban Engineering Inc. a licensed Michigan surveyor, completed the surveying tasks which included surface elevations, location of site features, top-of-casing elevation, and location of new and existing monitoring wells and piezometers. These data were used to prepare the site features for the various figures used in this memorandum, including Figure 3, which shows the monitoring well and piezometer locations. These data were also used in the preparation of Figure 4 which shows the location of the generalized geologic cross sections provided as Figures 5 through 7.

Groundwater elevations were collected on three separate events (September 5, October 3 and November 16, 2000.) Tables 4, 5 and 6 list the measurements and the elevations. Potentiometric surface maps were prepared for the upper and lower saturated zones for each one of these events. The maps are attached as Figures 8 through 13.

Surface geophysical surveys were conducted as part of the site investigation. As described in the Work Plan, the objective of the geophysical investigation was to delineate the extent of buried waste materials.

Electromagnetic (EM) and magnetic survey methods were utilized to accomplish the survey objective. Descriptions of the two geophysical methods are provided below. Descriptions of the survey instrumentation, field methods, and results are also provided.

3.1 FIELD PROGRAM

URS conducted the geophysical field investigation during the period of July 17 to 22, 2000. Technical staff from the MDEQ's consultant, MP, were present during the field investigation to provide oversight on behalf of MDEQ. Staff from the MDEQ also visited the site during the geophysical field investigation.

3.2 GRID LAYOUT

A site specific surveying coordinate system was established during previous phases of investigation. This coordinate system's origin (Northing = 0 feet, and Easting = 0 feet) is located at the northwest corner of the property. The coordinate system's Y-axis (Northing) runs parallel to the fence line that forms the northern boundary of the site. The X-axis (Easting) runs perpendicular to this fence line.

Prior to commencement of the geophysical investigation, a land surveyor established a base survey grid consisting of wooden lathe placed at 100-foot centers along grid lines Y = 0 feet and Y = -300 feet. The geophysical investigation team supplemented this base grid with PVC pin flags placed at 20-foot centers along lines spaced at 100 feet centers (Y = 0 feet, -100, -200 feet, -300 feet, etc... to -1,200 feet).

3.3 EM SURVEY

The EM data were collected using a Geonics EM-31 utilizing a data station spacing of 2.5 feet. Survey transects were oriented roughly north-south and spaced 20-feet apart. Quadrature and inphase measurements were collected at each station using the vertical dipole mode. The EM-31 readings were recorded using a data logger that allowed the operator to store and record station coordinate information and EM data, simultaneously.

Upon completion of the EM survey, the data were downloaded to a personal computer. The data were then formatted for input to a contouring program. Data plotting and contouring were accomplished using the computer software SURFER. Inputs to the contouring program included the station coordinates, EM readings, a selected spacing for gridding the raw data, and a contour interval. Color enhanced contour maps were generated for both the quadrature and inphase data. The contour maps are included as Appendix A.

3.4 MAGNETIC SURVEY

Magnetic total field and vertical gradient data were collected with a GeoMetrics G858G cesium vapor magnetic gradiometer. Data stations were on a spacing of 2.5 feet along roughly north-south oriented survey lines, 20-feet apart. Continuously recorded magnetic base station data were collected using a separate GeoMetrics G856 magnetometer, to make the diurnal corrections.

Upon completion of the magnetic survey, the data were downloaded to a personal computer. The data were then formatted for input to a contouring program. Data plotting and contouring was accomplished using the computer software SURFER. Inputs to the contouring program included the station coordinates, magnetic readings, a selected spacing for gridding the raw data, and a contour interval. Color enhanced contour maps were generated for both the magnetic total field and vertical gradient data. These maps are included in Appendix A.

3.5 GEOPHYSICAL INVESTIGATION RESULTS

The results of the geophysical investigation are depicted in the contour maps included in Appendix A. Figures A1 and A2 depict the EM quadrature and inphase response results, respectively. Figures A3 and A4 depict the magnetic vertical gradient and magnetic total field results, respectively. Appendix A includes a summary of the geophysical investigation.

3.6 TEST PITS

As shown on Figure 2, test pit excavations were completed at ten locations. Six of the locations (TP-1, 2, 3, 4, 5, and 6) were selected by MDEQ/MP based on their interpretation of geophysical surveys. The remaining four test pits revealed subsurface conditions for future geotechnical considerations. These four test pits were not associated with the above-described magnetic and electromagnetic anomalies. Three (TP-7, 8, 9) of the ten locations were between the eastern fence and the Trenton Channel shoreline. One test pit (TP-10) was completed at the location of monitoring well MW-M.

Table 1 lists the northing and easting coordinates and the rationale for the test pits. The test pits were excavated using a pneumatic tired "backhoe" operated by Vac All Services, Inc. Excavated soil was placed on high density polyethylene (HDPE) liner. Descriptive logs were prepared for each test pit by URS and are included in Appendix B. Both URS and MDEQ representatives collected composite samples of the excavated materials for laboratory analysis. MDEQ also collected 20 gallons of excavated material for a treatability study. Following completion, the test pits were backfilled to grade with excavated material and the HDPE liner material.

Descriptive logs of the test pits are attached in Appendix B. Photographs of the test pits were transmitted to MDEQ by BASF on December 18, 2000. The letter discusses the inherent difficulties of stabilizing the landfilled materials. As described in that letter, the material within the landfill is heterogeneous, and unfit for either insitu or exsitu stabilization. Materials unearthed include gravel, sand, metal bands, bricks, rubber hoses, steel pipes, boulders, metal building siding, chunks of concrete, reinforcing steel, and lumber.

Prior to this investigation, 37 monitoring wells and/or piezometers were present on the site. As part of this investigation, an additional 35 monitoring wells were installed. Table 2 lists the changes made to the well designations from the Work Plan. These changes were made with MDEQ's approval. Table 3 provides well construction details.

The objective of the groundwater investigation was to collect additional data to assess remedial technologies. The existing and new wells were used to monitor contaminant concentrations in each stratigraphic unit, evaluate aquifer properties, and measure groundwater flow in each stratigraphic unit. Nested wells were installed at several locations, which consisted of one shallow, and one or more deeper wells at a single location. Five deep, double cased wells were installed. These wells were double cased to prevent potential migration of shallow contamination migrating to the lower water bearing zone.

Drilling was completed by Stearns Drilling of Dutton, Michigan using a CME model 550 drilling rig. Drilling occurred between July 25 and August 15, 2000. The shallow borings were drilled using 4.25-inch inside diameter (ID) hollow stem augers (HAS). The deep borings were initially sampled by drilling a pilot hole with 4.25-inch ID HSA. After drilling to the top of the gray clay, 12.25-inch ID HSA were used enlarge the hole and install the 10-inch steel casing. The casing was installed through the fill material and into the native gray clay. Soil samples were collected continuously to the termination depth. Split-spoon samples were not collected during the drilling of the shallow nested wells since the soils were described in the adjacent deep well.

Soil samples were collected using a splitspoon sampler in general accordance with ASTM Method D1586. Upon collection, each split spoon was opened, logged, and field screened by the URS on-site representative. Samples selected for laboratory analysis were place in the appropriate laboratory containers and delivered to Shrader Laboratories, Inc. (Shrader) in Detroit, Michigan for analyses. In addition, five soil samples were also analyzed for dioxins as stipulated by MDEQ. Soil results exceeding the GSI are listed in Table 7. Tables 8 and 9 summarizes the PCB and dioxin compounds detected in soil samples.

Boring logs were prepared for each boring sampled. The boring logs are include in Appendix B. The boring logs generated from the new borings and the existing boring logs were used to prepare the generalized geologic cross sections. The cross section location are shown in Figure 4 and the cross sections follow on Figures 5, 6 and 7.

The termination depths for the deep wells do not comply with the Work Plan. Rather MDEQ and MP representatives insisted that the wells be advanced at the discretion of the on-site observers.

Prior to drilling each boring and collecting each sample, all reusable drilling and sampling equipment was cleaned using high-pressure hot water. Well screen and risers were also cleaned with high pressure hot water. Decontamination water generated during these activities was containerized in a 1,500-gallon tank and managed as investigation derived waste (IDW) by a BASF contractor. Soil generated during drilling operations was used to fill a low area of the site.

4.1 MONITORING WELL INSTALLATION

Soil borings were completed as monitoring wells. The wells were constructed of 2-inch diameter, flushthreaded, Schedule 40 PVC casing, terminating in a 2.5 to 5 feet long, wire-wound section of screen. A threaded bottom plug was also installed. A sand pack was placed in the annular space surrounding the screened section and extended 0.5 to 2 feet above the screened interval. All well materials were installed through the HSA. Generally, a minimum of 1 foot of coarse granular bentonite was placed above the sand pack and a bentonite cement slurry was placed in the remaining annular space above the seal. This protocol was modified when a well was too shallow to add the slurry. A watertight well cap was placed on all wells to inhibit tampering. A steel casing or flushmount protective cover was installed over each monitoring well. The steel casings or flushmount covers were set in concrete. Well completion diagrams are included on the boring logs located in Appendix B.

The horizontal and vertical locations of all the monitoring wells were surveyed by Urban Engineering, a local, Michigan licensed surveyor.

4.2 MONITORING WELL DEVELOPMENT

The new monitoring wells were developed after installation to remove silts or fine sands that may have accumulated in the well screen during drilling and installation procedures. The new shallow and intermediate wells were developed using a rotary screw pump on the drilling rig. A bladder pump and hand pump used to develop the deep wells and bedrock well, respectively.

All water and sediments removed during development were collected, containerized in a temporary holding tank, and managed as IDW as described above.

The Work Plan proposed that 16 offshore borings be advanced immediately east of the Site in the Trenton Channel. Thirteen borings were ultimately advanced. With the approval of the MDEQ, three borings were eliminated. Borings were eliminated when two adjacent borings in the same transect did not encounter fill material. The proposed boring number 3 was eliminated when boring numbers 2 and 4 did not encounter any fill.

As shown on Figures 2 and 4, the borings were located in four transects with between two and four borings in each transect. The borings were completed using a CME model 550 drilling rig mounted on a barge. The borings were advanced using 4.25 – inch HSA and splitspoon samplers. Boring logs for these borings are included in Appendix B.

Transect lines were marked by targets on one shore. Each boring location was recorded as a distance from the shore. Samples were collected using splitspoon samplers in general accordance with ASTM Method D1586. Upon collection, each split spoon was opened, logged, and field screened by the URS on-site representative. Samples selected for laboratory analysis were place in the appropriate laboratory containers and delivered to Shrader. Results exceeding the GSI are listed in Table 10.

Well purging was completed to remove the stagnant water from the well to obtain a representative water sample from the geologic formation. Purging was completed on all new and existing wells prior to sampling. The wells were purged and sampled using peristalic pumps or bladder pumps. A slow-flow peristaltic pump or bladder pump (used on the deeper wells) was used to minimize the disturbance to the samples while purging and sampling. When the peristalic pump was used, the Tygon sample tubing was changed prior to collection of each sample. When the bladder pump was used, the pump was cleaned prior to collection of each sample.

The following procedures were performed at each well:

- The condition of the outer well casing, concrete well pad, and any unusual conditions of the area around the well was noted in the field logbook;
- The well was opened and the air in the breathing zone around the well was monitored for VOCs with a PID;
- The condition of the inner well cap and casing was noted;
- The depth of static water level was measured (to nearest 0.01 foot) and recorded from the north rim of the casing;
- The time at which purging began was recorded; and
- The purge rate from the pump began at 0.5 L/min, but was adjusted to minimize the effects of drawdown on the well.

During purging, water was monitored for pH, conductivity, temperature, and turbidity. These parameters were monitored until they stabilized, or the well went dry. Copies of the low flow well sampling logs are attached in Appendix C. The monitoring meters were calibrated daily prior to use. Calibration times and readings were recorded in the field book.

It was not uncommon for the wells to go dry. Sampling rates were slow in many of the wells. Purging rates ranged between 0.013 and 0.5 liters per minutes.

6.1 ANALYTICAL SAMPLE COLLECTION

Samples for chemical analyses were collected immediately after the water chemistry stabilized. The pump rate for sample collection was 0.1 L/min.

Groundwater samples were analyzed for parameters included in a letter from BASF to MDEQ dated March 15, 2000. MDEQ approved the set of parameters in a letter to BASF dated May 25, 2000. The parameters are listed in Appendix F. In addition, five groundwater water samples were also analyzed for dioxins as stipulated by MDEQ.

Samples were collected from 35 new monitoring wells and 34 of the 37 existing monitoring wells. Samples were place in the appropriate laboratory containers and delivered to Shrader. Groundwater results exceeding the GSI are listed in Table 11. Dioxins detected in groundwater are included in Table 13.

Existing monitoring wells MW-M and MW-F were not sampled due to the presence of LNAPL. Monitoring well MW-M ~~and temporary well SB-3 (from the 1999 investigation) were~~ WAS subsequently removed during the test pit excavation. Existing monitoring well MW-L was not sampled due to lack of groundwater.

Rising and falling head "slug tests" were employed to estimate the hydraulic conductivities of the materials beneath the Site. Slug tests were completed in the field on the new and several existing wells. These tests were completed between August 21 and 31, 2000 and November 15 and 17, 2000. The Work Plan calls for three tests to be completed at each well. With MDEQ's consent, two tests (one rising and one falling) were completed at each well.

Rising head slug test data were used to estimate hydraulic conductivities using Bouwer and Rice method of analysis for unconfined aquifers (Bouwer & Rice, 1976; Bouwer, 1989). The results are summarized in Table 13. Table 14 provides mean hydraulic conductivities for shallow, intermediate and deep monitoring wells. These values are consistent with the values from previous hydraulic conductivity testing.

As shown on Figure 2, five samples were collected from the concrete riprap that lines the bank of the Trenton Channel on the Site. Sample locations were selected in an effort to distribute the samples across the Riprap Area; however, in some cases access was a limiting factor. The actual sample was selected from large pieces of concrete (crucibles) that were known to be used in previous manufacturing operations. These concrete pieces were moved from the water to the shore. A concrete saw was used to remove a section of concrete. These concrete samples were then split into a top 1/3, middle 1/3 and bottom 1/3 and placed into the appropriate containers and delivered to Shrader for PCB and mercury analysis. Results are listed in Table 15. The Riprap sampling locations and methodology were approved by MDEQ oversight personnel.

During the 1999 (EECA) and 2000 site investigations, groundwater samples were collected from on-site monitoring wells. During the 1999 investigation, three soil surface samples were collected. During the 2000 Site Investigation, additional on-site soil samples and river fill samples were collected. During both investigations, groundwater samples were collected from both new and existing monitoring wells and piezometers. Selected concrete Riprap samples were also collected and analyzed for particular chemical parameters during both investigations. The following sections briefly discuss the analytical results of the 2000 Site Investigation and how they compare to the 1999 analytical results.

URS completed a data quality review, which is summarized in the Data Quality Assessment Report included in Appendix F. Based on the review, the data are appropriate for their intended use of site characterization. URS also completed a cursory review of the MDEQ data deliverables for content and completeness. As a whole, the MDEQ data also appear to be suitable for their intended use of site characterization.

9.1 SUMMARY OF DATA COLLECTED

A total of 78 groundwater samples (including field blanks and duplicate samples), 51 soil samples, 4 fill samples, 15 concrete samples, and 10 aqueous trip blanks were submitted to Shrader for the analyses listed in Table F-1 of the Data Quality Assessment Report (Appendix F). Tables 4, 5 and 6 include a complete list of wells is included in the 2000 Site Investigation. Monitoring well MW-L was dry and could not be sampled. Monitoring well MW-M was decommissioned and was not sampled. Samples were collected between July 26 and August 31, 2000, and were received at the laboratory between July 27 and August 31, 2000.

The groundwater and soil samples were analyzed for volatile and semivolatile compounds, PCBs, metals and wet chemistry parameters using the USEPA SW-846 analytical methods specified in Appendix F. With the exception of volatile compounds, the fill samples were analyzed for the same set of analyses. Although not specified in the Work Plan, at MDEQ's request, five soil and five groundwater samples were also analyzed for dioxins.

Analysis for volatile compounds, semivolatile compounds, and PCBs were performed by Shrader. The metals and wet chemistry analyses were performed by Jones & Henry Laboratories of Northwood, Ohio. The dioxin analyses were performed by Pace Analytical Services, Inc., of Minneapolis, Minnesota. The Data Quality Assessment Report included in Appendix F evaluates the analyses resulting from the 2000 Site Investigation.

9.2 EVALUATION OF SOIL DATA

Soil analytical results from the 2000 Site Investigation are included as Table E-1 (Appendix E). Several volatile and semivolatile compounds, metals, cyanide and one PCB (Aroclor 1254) were detected.

Of the parameters detected, 13 volatile compounds, 10 semivolatile compounds, nine metals, chloride, total cyanide and nitrogen-ammonia exceed the GSI Criteria in at least one sample. The GSI exceedances are summarized in Table 7. PCB and dioxin compounds detected in soil samples are shown in Tables 8 and 9, respectively. Aroclor 1254 was detected in several of the soil samples. Aroclors 1248 and 1260 were detected in one soil sample.

The most significant soil GSI exceedances during the 1999 and 2000 investigations are mercury and cyanide.

9.3 EVALUATION OF FILL DATA

Fill analytical results from the 2000 Site Investigation are included as Table E-2 (Appendix E). Several semivolatile compounds, metals, cyanide and one PCB (Aroclor 1254) were detected. Of the parameters detected, two semivolatile compounds, eight metals, chloride, total cyanide and nitrogen-ammonia exceed the GSI Criteria in at least one sample. The GSI exceedances are summarized in Table 10.

For the analyses completed, the fill analytical results are similar to the soil results. The most significant GSI exceedances in the fill appear to be lead, mercury and cyanide. No fill samples were collected from the Trenton Channel during the 1999 investigation.

9.4 EVALUATION OF SHALLOW GROUNDWATER DATA

A total of 57 shallow monitoring wells (MWs and SMWs), intermediate monitoring wells (IMWs) and piezometers (PIEZs) were sampled during the 2000 Site Investigation. All of these wells are screened in either fill or the upper soil, above the clay. Shallow groundwater analytical results from the 2000 Site Investigation are included as Table E-4 (Appendix E).

Of the parameters detected, 14 volatile compounds, 19 semivolatile compounds, nine metals, chloride, total cyanide and nitrogen-ammonia exceed the GSI Criteria in at least one sample. The GSI exceedances are summarized in Table 11. Dioxin compounds detected in groundwater samples are shown in Table 12.

The shallow groundwater analytical results from the 2000 Site Investigation are similar to the results of the 1999 investigation.

9.5 EVALUATION OF DEEP GROUNDWATER DATA

During the 2000 Site Investigation, 11 deep monitoring wells (DMWs) screened in the clay, and one well screened in bedrock (BMW-1) were sampled. The analytical results from the deep monitoring wells sampled during the 2000 Site Investigation are included as Table E-4 (Appendix E).

Of the parameters detected, two volatile compounds and five semivolatile compounds exceed the GSI criteria in the groundwater sample collected from DMW-6. Bis(2-Ethylhexyl)phthalate exceeds the GSI criterion in the groundwater samples collected from DMW-3 and DMW-5. Selenium exceeds the GSI criterion in the sample collected from DMW-5. Chloride, total cyanide and nitrogen-ammonia exceed the GSI Criteria in at least one sample. No PCBs were detected in the deep wells. The GSI exceedances are summarized in Table 11. Dioxin compounds detected in groundwater samples are shown in Table 12.

The deep groundwater analytical results from the 2000 Site Investigation are similar to the results of the 1999 investigation. With the exception of nitrogen-ammonia and chlorides, no target parameters were reported in the bedrock monitoring well. MDEQ is agreeable that this ammonia is naturally occurring and is not attributable to the Riverview Site (MDEQ Memorandum from Steve Hoin dated May 16, 2000). The chlorides are also naturally occurring.

9.6 EVALUATION OF CONCRETE DATA

Concrete analytical results from the 2000 Site Investigation are included as Table E-3 (Appendix E). Concrete samples were analyzed for PCBs and mercury. No PCBs were detected in the concrete samples. As shown on Table 15, four of the 15 samples collected contained mercury concentrations in excess of the GSI soil criterion. The mercury concentrations reported ranged between 0.20 mg/kg and 0.30 mg/kg.

The concrete analytical results from the 2000 Site Investigation are similar to the results of the 1999 investigation. During the 1999 investigation, two concrete samples containing the highest concentrations were also analyzed by the toxicity characteristics leaching procedure (TCLP). Mercury was not present in the TCLP leachate at concentrations above 0.002 mg/L. No TCLP analyses were completed during the 2000 Site Investigation.

The goal of the groundwater treatment is to reduce mercury concentrations to attain the GSI. Based on available technologies, the concentration of other chemicals found in groundwater are more easily reduced.

Pursuant to this goal, BASF contracted with Frontier Geosciences Inc. (Frontier) to perform bench scale testing to identify methods of reducing the mercury concentrations in the groundwater. The results of their study[1] are summarized below.

A series of experiments was undertaken to chemically characterize the groundwater, and to test the most promising approaches to the treatment of this water for mercury removal. The water was found to be high in mercury and arsenic, as well as sulfide, pH and dissolved organic carbon.

The raw water is not very amenable to any treatment option, but upon acidification, much of the dissolved organic matter precipitates, which co-precipitates much of the mercury as well. Typically about 90-99% of the total mercury present was removed by acidification alone, with up to another order of magnitude removed by secondary treatment options. Most of the mercury removal (99.3%) occurs as a result of acidification plus filtration. Additional removal (>99.9%) occurred when sulfhydryl resin, KeyleX-100, was used after acidifying the settled water. Frontier felt that with further optimization, this could be improved in a column-based (flow-through) extraction scheme.

Additional details concerning the bench scale testing and the application of the results to site remediation are included in the Feasibility Study.

[1] Nicolas Bloom, "Influence of Speciation on the Efficiency and Reproducibility of Mercury Removal from Contaminated Wastewaters", Frontier Geosciences Inc., Jan 1, 2001.

Tables

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Table 1
Test Pit Locations
August 200
BASF Property, Riverview Michigan

Test Pit ID	Test Pit Location: Northing	Test Pit Location: Easting	Anomaly / Rationale
TP-1	-0905 to -940	735	Unidentified relative high mag. area
TP-2	-1115 to -1140	635 to 660	Unidentified relative high EM area with no associated relative high mag. response. This test pit will be field located (i.e., adjusted) to minimize disturbance of poplar trees.
TP-3	-500 to -525	520 to 540	Unidentified relative high EM area with no associated relative high mag. response. Associated wth large EM anomaly:
TP-4	-180 to -200	500 to 520	Unidentified relative high EM area with no associated relative high mag. response. Associated wth large EM anomaly.
TP-5	-380 to -405	880	Unidentified relative high mag. And EM area.
TP-6	-360 to -385	625 to 645	Relative low EM area surround by high EM area. Look at contrasting response anomaly.
TP-7	-1098	885	Investigate material along shore in case of future excavation.
TP-8	-852	908	Investigate material along shore in case of future excavation.
TP-9	-606	927	Investigate material along shore in case of future excavation.
TP-10	-28	806	Investigate oily material in MW-M.

Note: Field readings and material descriptions are included in Test Pit Logs included in appendix.
TP-1 through TP-6 locations selected by Malcolm Pirnie.

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Table 2
Changes to Monitoring Well Names
BASF Property, Riverview Michigan

Work Plan Designation	Final Designation	Work Plan Designation	Final Designation
MW-1s	SMW-4	MW-9s	SMW-13
MW-2s	SMW-9	MW-9i	IMW-13
MW-2i	IMW-9	MW-9d	DMW-13
MW-2d	DMW-9	MW-10s	SMW-23
MW-3s	SMW-5	MW-11s	SMW-22
MW-3i	IMW-5	MW-12s	SMW-21
MW-4s	SMW-10	MW-13i	IMW-1
MW-4i	IMW-10	MW-14s	SMW-14
MW-4d	DMW-10	MW-15s	SMW-15
MW-5s	SMW-6	MW-16s	SMW-16
MW-5i	IMW-6	MW-17s	SMW-17
MW-6s	SMW-11	MW-18s	SMW-18
MW-6i	IMW-11	MW-19s	SMW-19
MW-6d	DMW-11		
MW-7s	SMW-20	Existing Wells	
MW-8s	SMW-12	SMW-4	SMW-4-99
MW-8i	IMW-12	SMW-5	SMW-5-99
MW-8d	DMW-12	SMW-6	SMW-6-99

Notes:
Work Plan well designations were changed in the field at the request of BASF representative with the consent of DEQ representatives.

Table 3
Well Construction Information
BASF Property, Riverview Michigan

Well Number	Material	Inside Diam. (inches)	Total Depth (ft)	Notes
A	PVC	2	12.6	
B	PVC	2	10.1	
C	PVC	2	8.5	
D	PVC	2	8.6	
E	PVC	2	9.6	
F	PVC	2	Information not available.	
G	PVC	2	11.0	
H	PVC	2	17.9	
I	PVC	2	11.9	
J	PVC	2	15.5	
K	PVC	2	16.3	
L	PVC	2	6.2	
M	Decommissioned	---	---	
DMW-1	PVC	2	28	0-16' steel cased
IMW-1	PVC	2	14	
SMW-1	PVC	2	10.5	
DMW-2	PVC	2	26	0-16' steel cased
SMW-2	PVC	2	10.5	
DMW-3	PVC	2	24	0-9.4' steel cased
SMW-3	PVC	2	7.5	
DMW-4	PVC	2	26	0-26' steel cased
SMW-4	PVC	2	10	drilled to 14'
DMW-5	PVC	2	24	0-14.3' steel cased
IMW-5	PVC	2	13	
SMW-5	PVC	2	8	
DMW-6	PVC	2	24	0-14' steel cased
IMW-6	PVC	2	12	
SMW-6	PVC	2	7	
SMW-4-99	PVC	2	8	
SMW-5-99	PVC	2	8	
SMW-6-99	PVC	2	8	
SMW-7	PVC	2	8	Cracked conc. Pad
SMW-8	PVC	2	6	
DMW-9	PVC	2	28	0-14' steel cased
IMW-9	PVC	2	13	
SMW-9	PVC	2	8	

Well Number	Material	Inside Diam. (inches)	Total Depth (ft)	Notes
DMW-10	PVC	2	26	0-14' steel cased
IMW-10	PVC	2	13	
SMW-10	PVC	2	8	
DMW-11	PVC	2	26	0-12' steel cased
IMW-11	PVC	2	11	
SMW-11	PVC	2	6	
DMW-12	PVC	2	30	1-22' steel cased
IMW-12	PVC	2	17	
SMW-12	PVC	2	12	
DMW-13	PVC	2	28	0-18' steel cased
IMW-13	PVC	2	17	
SMW-13	PVC	2	12	
SMW-14	PVC	2	8	drilled to 10'
SWM-15	PVC	2	8	
SMW-16	PVC	2	8	drilled to 10'
SMW-17	PVC	2	8	drilled to 12'
SMW-18	PVC	2	8	
SMW-19	PVC	2	8	
SMW-20	PVC	2	10	drilled to 12
SMW-21	PVC	2	8	
SMW-22	PVC	2	8	
SMW-23	PVC	2	9	drilled to 10'
SMW-24	PVC	2	12	drilled to 16'
SMW-25	PVC	2	12	drilled to 14'
SMW-26	PVC	2	12	drilled to 18'
SMW-27	PVC	2	16	drilled to 24'
BMW-1	PVC	2	65	0-30' steel cased
SB-1	PVC	4	11	drilled to 12'
SB-2	PVC	4	8.5	drilled to 10'
SB-3	PVC	4	8.5	drilled to 10'
PZ-1	PVC	2	10	
PZ-2	PVC	2	10	
PZ-3	PVC	2	10	
PZ-4	PVC	2	10	
PZ-5	PVC	2	10	
PZ-6	PVC	2	10	
Stilling well	PVC	2	NA	

Notes:

Top of Casing information provided on groundwater elevations tables and boring logs.

Table 4
Groundwater Elevations - September 5, 2000
BASF Property, Riverview Michigan

Well Number	Elevation TOC	Depth to Water	Groundwater Elevation	Notes
A	581.00	8.26	572.74	
B	579.05	6.32	572.73	
C	579.17	6.48	572.69	
D	579.07	5.16	573.91	
E	579.53	5.54	573.99	
F	582.01	---	---	
G	584.18	9.58	574.60	
H	583.26	9.98	573.28	
I	583.30	9.42	573.88	
J	585.83	11.20	574.63	
K	585.73	12.29	573.44	
L	581.90	7.36	574.54	
M	Decommissioned	---	---	
DMW-1	579.16	10.80	568.36	
IMW-1	579.62	7.22	572.40	
SMW-1	579.55	7.14	572.41	
DMW-2	581.25	8.87	572.38	
SMW-2	580.75	6.86	573.89	
DMW-3	580.74	5.86	574.88	
SMW-3	580.33	5.22	575.11	
DMW-4	581.26	14.52	566.74	
SMW-4	581.41	8.77	572.64	
DMW-5	577.60	10.68	566.92	
IMW-5	577.79	5.28	572.51	
SMW-5	577.85	5.35	572.50	
DMW-6	578.01	5.73	572.28	
IMW-6	577.50	3.75	573.75	
SMW-6	577.75	4.02	573.73	
SMW-4-99	579.08	4.62	574.46	
SMW-5-99	579.84	4.99	574.85	
SMW-6-99	579.65	5.58	574.07	
SMW-7	578.74	4.15	574.59	Cracked conc. Pad
SMW-8	578.22	3.91	574.31	
DMW-9	579.16	7.99	571.17	
IMW-9	579.12	6.56	572.56	
SMW-9	579.26	6.70	572.56	

Well Number	Elevation TOC	Depth to Water	Groundwater Elevation	Notes
DMW-10	577.66	24.50	553.16	
IMW-10	577.70	4.56	573.14	
SMW-10	577.81	4.10	573.71	
DMW-11	577.62	25.04	552.58	
IMW-11	577.69	3.90	573.79	
SMW-11	577.70	3.91	573.79	
DMW-12	584.06	29.88	554.18	
IMW-12	584.16	11.15	573.01	
SMW-12	584.19	11.08	573.11	
DMW-13	583.08	23.83	559.25	
IMW-13	583.09	8.94	574.15	
SMW-13	582.90	8.44	574.46	
SMW-14	578.89	5.62	573.27	
SWM-15	580.02	8.23	571.79	
SMW-16	577.45	4.94	572.51	
SMW-17	576.16	3.34	572.82	
SMW-18	575.74	3.26	572.48	
SMW-19	575.36	3.00	572.36	
SMW-20	582.98	9.00	573.98	
SMW-21	581.18	5.62	575.56	
SMW-22	581.94	7.98	573.96	
SMW-23	582.47	8.14	574.33	
SMW-24	579.45	6.77	572.68	
SMW-25	578.53	6.14	572.39	
SMW-26	577.28	5.01	572.27	
SMW-27	577.69	5.52	572.17	
BMW-1	577.78	23.01	554.77	
SB-1	580.42	5.62	574.80	
SB-2	581.67	8.16	573.51	
SB-3	579.63	5.69	573.94	
PZ-1	579.40	6.81	572.59	
PZ-2	579.25	6.43	572.82	
PZ-3	578.97	6.44	572.53	
PZ-4	578.90	5.24	573.66	
PZ-5	578.19	5.41	572.78	
PZ-6	578.87	6.28	572.59	
Stilling well	578.50	6.46	572.04	

Notes: All measurements recorded in feet.
Elevations are based on Urban Engineering's August 29, 2000 letter.
Elevations are in IGLD (International Great Lakes Datum).

Table 5
Groundwater Elevations - October 3, 2000
BASF Property, Riverview Michigan

URS

Well Number	Elevation TOC	Depth to Water	Groundwater Elevation	Notes
A	581.00	8.30	572.70	
B	579.05	6.54	572.51	
C	579.17	6.70	572.47	
D	579.07	5.05	574.02	
E	579.53	5.44	574.09	
F	582.01	---	---	
G	584.18	9.30	574.88	
H	583.26	9.39	573.87	
I	583.30	9.00	574.30	
J	585.83	10.98	574.85	
K	585.73	12.27	573.46	
L	581.90	7.14	574.76	
M	Decommissioned	---	---	
DMW-1	579.16	10.88	568.28	
IMW-1	579.62	7.30	572.32	
SMW-1	579.55	7.45	572.10	
DMW-2	581.25	8.90	572.35	
SMW-2	580.75	6.83	573.92	
DMW-3	580.74	5.56	575.18	
SMW-3	580.33	5.18	575.15	
DMW-4	581.26	10.57	570.69	
SMW-4	581.41	8.82	572.59	
DMW-5	577.60	6.96	570.64	
IMW-5	577.79	5.60	572.19	
SMW-5	577.85	5.66	572.19	
DMW-6	578.01	5.82	572.19	
IMW-6	577.50	3.70	573.80	
SMW-6	577.75	3.92	573.83	
SMW-4-99	579.08	4.37	574.71	
SMW-5-99	579.84	4.54	575.30	
SMW-6-99	579.65	4.54	575.11	
SMW-7	578.74	3.85	574.89	Cracked conc. Pad
SMW-8	578.22	3.45	574.77	
DMW-9	579.16	7.35	571.81	
IMW-9	579.12	6.73	572.39	
SMW-9	579.26	6.88	572.38	
DMW-10	577.66	13.05	564.61	
IMW-10	577.70	4.58	573.12	
SMW-10	577.81	4.05	573.76	
DMW-11	577.62	11.98	565.64	
IMW-11	577.69	3.92	573.77	
SMW-11	577.70	3.90	573.80	
DMW-12	584.06	21.93	562.13	
IMW-12	584.16	11.08	573.08	
SMW-12	584.19	10.98	573.21	
DMW-13	583.08	12.84	570.24	
IMW-13	583.09	8.51	574.58	
SMW-13	582.90	8.01	574.89	
SMW-14	578.89	5.77	573.12	
SWM-15	580.02	5.74	574.28	
SMW-16	577.45	4.81	572.64	
SMW-17	576.16	3.46	572.70	
SMW-18	575.74	3.29	572.45	
SMW-19	575.36	3.46	571.90	
SMW-20	582.98	8.95	574.03	
SMW-21	581.18	5.49	575.69	
SMW-22	581.94	8.07	573.87	
SMW-23	582.47	7.88	574.59	
SMW-24	579.45	6.78	572.67	
SMW-25	578.53	6.84	571.69	
SMW-26	577.28	5.76	571.52	
SMW-27	577.69	6.20	571.49	
BMW-1	577.78	22.84	554.94	
SB-1	580.42	5.05	575.37	
SB-2	581.67	7.51	574.16	
SB-3	579.63	5.45	574.18	
PZ-1	579.40	6.63	572.77	
PZ-2	579.25	6.53	572.72	
PZ-3	578.97	6.61	572.36	
PZ-4	578.90	5.34	573.56	
PZ-5	578.19	5.35	572.84	
PZ-6	578.87	6.46	572.41	
Stilling well	578.50	6.94	571.56	

Notes: All measurements recorded in feet.
Elevations are based on Urban Engineering's August 29, 2000 letter.
Elevations are in IGLD (International Great Lakes Datum).

Table 6
Groundwater Elevations - November 16, 2000
BASF Property, Riverview Michigan

Well Number	Elevation TOC	Depth to Water	Groundwater Elevation	Notes
A	581.00	8.24	572.76	
B	579.05	6.58	572.47	
C	579.17	6.73	572.44	
D	579.07	3.86	575.21	
E	579.53	4.19	575.34	
F	582.01	---	---	Oil in well
G	584.18	8.69	575.49	
H	583.26	8.62	574.64	
I	583.30	8.09	575.21	
J	585.83	10.01	575.82	
K	585.73	11.95	573.78	
L	581.90	6.62	575.28	
M	Decommissioned	---	---	
DMW-1	579.16	11.39	567.77	
IMW-1	579.62	7.39	572.23	
SMW-1	579.55	7.48	572.07	
DMW-2	581.25	9.35	571.90	
SMW-2	580.75	6.12	574.63	
DMW-3	580.74	6.09	574.65	
SMW-3	580.33	5.05	575.28	
DMW-4	581.26	10.33	570.93	
SMW-4	581.41	8.99	572.42	
DMW-5	577.60	6.33	571.27	
IMW-5	577.79	5.99	571.80	
SMW-5	577.85	6.08	571.77	
DMW-6	578.01	6.13	571.88	
IMW-6	577.50	3.02	574.48	
SMW-6	577.75	3.29	574.46	
SMW-4-99	579.08	3.81	575.27	
SMW-5-99	579.84	3.41	576.43	
SMW-6-99	579.65	4.38	575.27	
SMW-7	578.74	3.45	575.29	Cracked conc. Pad
SMW-8	578.22	2.99	575.23	
DMW-9	579.16	8.31	570.85	
IMW-9	579.12	7.10	572.02	
SMW-9	579.26	7.26	572.00	

Well Number	Elevation TOC	Depth to Water	Groundwater Elevation	Notes
DMW-10	577.66	8.00	569.66	
IMW-10	577.70	4.27	573.43	
SMW-10	577.81	3.40	574.41	
DMW-11	577.62	8.73	568.89	
IMW-11	577.69	3.07	574.62	
SMW-11	577.70	3.12	574.58	
DMW-12	584.06	14.96	569.10	
IMW-12	584.16	11.11	573.05	
SMW-12	584.19	11.00	573.19	
DMW-13	583.08	12.36	570.72	
IMW-13	583.09	8.20	574.89	
SMW-13	582.90	8.67	574.23	
SMW-14	578.89	3.61	575.28	
SWM-15	580.02	3.48	576.54	
SMW-16	577.45	3.80	573.65	
SMW-17	576.16	5.92	570.24	11/17/00
SMW-18	575.74	5.66	570.08	11/17/00
SMW-19	575.36	4.67	570.69	11/17/00
SMW-20	582.98	8.86	574.12	
SMW-21	581.18	5.35	575.83	
SMW-22	581.94	8.18	573.76	
SMW-23	582.47	7.83	574.64	
SMW-24	579.45	6.89	572.56	
SMW-25	578.53	7.47	571.06	
SMW-26	577.28	6.45	570.83	
SMW-27	577.69	6.85	570.84	
BMW-1	577.78	23.29	554.49	
SB-1	580.42	4.15	576.27	
SB-2	581.67	7.16	574.51	
SB-3	579.63	5.17	574.46	
PZ-1	579.40	7.14	572.26	
PZ-2	579.25	6.80	572.45	
PZ-3	578.97	6.99	571.98	
PZ-4	578.90	5.51	573.39	
PZ-5	578.19	6.79	571.40	
PZ-6	578.87	6.78	572.09	
Stilling well	578.50	7.85	570.65	

Notes: All measurements recorded in feet.
Elevations are based on Urban Engineering's August 29, 2000 letter.
Elevations are in IGLD (International Great Lakes Datum).

Table 7
BASF Riverview, Michigan
Soil Samples
GSI Criteria Comparison
Printed: 1/31/0

URS

VOLATILE ORGANICS	SAMPLE #	GSI Criteria+	DMW-09 (02'-04') I997001 7/27/00	DMW-09 (06'-08') I997002 7/27/00	DMW-09 (10'-12') I997003 7/27/00	DMW-09 (26'-28') J007001 8/2/00	DMW-10 (02'-04') J001001 7/31/00	DMW-10 (08'-10') J001002 7/31/00	DMW-10 (10'-12') J001003 7/31/00	DMW-10 (24'-26') J007002 8/2/00	DMW-11 (04'-06') J001006 7/31/00	DMW-11 (06'-08') J001008 7/31/00	DMW-11 (24'-26') J008001 8/3/00
1,2-Dichlorobenzene	mg/kg	0.36	0.3 ND	0.3 ND	0.3 ND	0.1 ND	0.3 ND	0.2 ND	0.1 ND	0.2 ND	0.2 ND	0.2 ND	0.1 ND
1,2-Dichloroethane	mg/kg	0.12	0.4 ND*	0.4 ND*	0.4 ND*	0.3 ND*	0.4 ND*	0.2 ND*	0.2 ND*	0.2 ND*	0.2 ND*	0.3 ND*	0.2 ND*
1,2-Dichloropropane	mg/kg	0.18	0.2 ND*	0.2 ND*	0.3 ND*	0.2 ND*	0.2 ND*	0.1 ND	0.09 ND	0.1 ND	0.1 ND	0.2 ND*	0.1 ND
1,4-Dichlorobenzene	mg/kg	0.29	0.2 ND	0.2 ND	0.2 ND	0.08 ND	0.2 ND	**0.33**	0.08 ND	0.1 ND	0.1 ND	0.1 ND	0.07 ND
Acetone	mg/kg	34	8 ND	3 ND	3 ND	2 ND	3 ND	2 ND	1 ND	2 ND	2 ND	2 ND	4 ND
Benzene	mg/kg	0.24	0.07 ND	0.23	0.08 ND	0.05 ND	0.06 ND	0.19	0.03 ND	0.04 ND	0.16	0.05 ND	0.03 ND
Ethylbenzene	mg/kg	0.36	0.2 ND	0.2 ND	0.2 ND	0.09 ND	0.2 ND	0.1 ND	0.07 ND	0.1 ND	0.33	0.1 ND	0.08 ND
m,p-Xylene	mg/kg	0.7	0.09 ND	0.09 ND	0.1 ND	0.05 ND	0.19	0.23	0.04 ND	0.05 ND	**1.6**	0.37	0.04 ND
Methylene chloride	mg/kg	0.94	0.2 ND	0.2 ND	0.2 ND	0.1 ND	0.2 ND	0.1 ND	0.09 ND	0.1 ND	**4.5**	0.2 ND	0.09 ND
o-Xylene	mg/kg	0.7	0.09 ND	0.1 ND	0.1 ND	0.06 ND	0.13	0.13	0.04 ND	0.06 ND	0.47	0.2	0.05 ND
Toluene	mg/kg	2.8	0.09 ND	0.2	0.1 ND	0.4	1.2	1.3	0.04 ND	0.23	**7.4**	1.6	0.04 ND
Trichloroethene	mg/kg	0.58	0.2 ND	0.2 ND	0.3 ND	0.2 ND	0.2 ND	0.1 ND	0.09 ND	0.1 ND	0.1 ND	**4.3**	0.1 ND
Vinyl chloride	mg/kg	0.3	0.1 ND	0.1 ND	0.1 ND	0.09 ND	0.1 ND	0.07 ND	0.05 ND	0.07 ND	0.08 ND	**0.72**	0.06 ND
Xylenes, total	mg/kg	0.7	0.09 ND	0.09 ND	0.1 ND	0.05 ND	0.32	0.36	0.04 ND	0.06 ND	**2.07**	0.57	0.04 ND

SEMIVOLATILE	SAMPLE #	GSI Criteria+	DMW-09 (02'-04') I997001 7/27/00	DMW-09 (06'-08') I997002 7/27/00	DMW-09 (10'-12') I997003 7/27/00	DMW-09 (26'-28') J007001 8/2/00	DMW-10 (02'-04') J001001 7/31/00	DMW-10 (08'-10') J001002 7/31/00	DMW-10 (10'-12') J001003 7/31/00	DMW-10 (24'-26') J007002 8/2/00	DMW-11 (04'-06') J001006 7/31/00	DMW-11 (06'-08') J001008 7/31/00	DMW-11 (24'-26') J008001 8/3/00
2,4,6-Trichlorophenol	mg/kg	0.33	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.1 ND
Acenaphthene	mg/kg	4.4	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.247	0.1 ND	0.1 ND	0.464	**6.59**	0.1 ND
Carbazole	mg/kg	1.1	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.29	0.915	0.1 ND	0.1 ND	0.456	**6.32**	0.1 ND
Dibenzofuran	mg/kg	1.7	0.1 ND	0.12	0.1 ND	0.1 ND	0.546	1.19	0.1 ND	0.1 ND	0.71	**4.56**	0.1 ND
Fluoranthene	mg/kg	5.5	0.102	0.564	0.1 ND	0.1 ND	2.4	3.17	0.1 ND	0.1 ND	5.48	**49.7**	0.1 ND
Fluorene	mg/kg	5.3	0.1 ND	0.185	0.1 ND	0.1 ND	0.214	1.08	0.1 ND	0.1 ND	0.982	**6.1**	0.1 ND
Hexachlorobutadiene	mg/kg	0.33	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.3 ND	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.1 ND
Isophorone	mg/kg	6.2	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.1 ND
Naphthalene	mg/kg	0.87	0.1 ND	0.547	0.1 ND	0.1 ND	0.797	**7.88**	0.102	0.1 ND	**1.52**	**7.57**	0.1 ND
Pentachlorophenol	mg/kg	0.036	0.3 ND*	0.2 ND*	0.3 ND*	0.3 ND*	0.3 ND*	0.3 ND*	0.3 ND*	0.2 ND*	0.3 ND	0.3 ND*	0.2 ND*
Phenanthrene	mg/kg	2.3	0.1 ND	0.704	0.1 ND	0.1 ND	**2.65**	**4.58**	0.1 ND	0.1 ND	**5.11**	**44.7**	0.1 ND

		GSI Criteria+	DMW-09 (02'-04') I997001 7/27/00	DMW-09 (06'-08') I997002 7/27/00	DMW-09 (10'-12') I997003 7/27/00	DMW-09 (26'-28') J007001 8/2/00	DMW-10 (02'-04') J001001 7/31/00	DMW-10 (08'-10') J001002 7/31/00	DMW-10 (10'-12') J001003 7/31/00	DMW-10 (24'-26') J007002 8/2/00	DMW-11 (04'-06') J001006 7/31/00	DMW-11 (06'-08') J001008 7/31/00	DMW-11 (24'-26') J008001 8/3/00
Arsenic	mg/kg	16	11.3	3.6	7.9	9.3	**43.3**	**17.2**	10.3	7.5	6.6	6.2	6.9
Barium	mg/kg	75	61.3	**108**	**116**	65.6	**142**	**262**	**110**	64.6	**136**	**171**	65.6
Cadmium	mg/kg	1.2	0.2	0.5	0.13	0.2	**1.5**	**1.5**	0.29	0.2	0.8	**3**	0.2
Chromium	mg/kg	18	**18.4**	16.2	**30.4**	15.6	**23.9**	**35.4**	**30.2**	15.4	**31.4**	**89.2**	**15.4**
Copper	mg/kg	32	**36.4**	19.3	26.8	21.4	**129**	**54**	19.6	21.2	**38.2**	**116**	21.4
Lead	mg/kg	21	**35.1**	**38**	13.6	9.6	**210**	**220**	16.2	9	**158**	**111**	8.2
Mercury	mg/kg	0.13	**0.79**	**0.62**	0.05 ND	0.05 ND	**3.61**	**9.74**	**0.21**	0.05 ND	**5.25**	**5.77**	0.05 ND
Selenium	mg/kg	0.41	**1.2**	0.3 ND	0.3 ND	1 ND	**0.8**	**0.8**	0.3 ND	1 ND	**0.8**	**1.3**	0.2 ND
Zinc	mg/kg	47	41.6	**70.9**	**93.5**	**57.5**	**212**	**275**	**76**	46.6	**238**	**783**	46

INORGANICS	SAMPLE #	GSI Criteria+	DMW-09 (02'-04') I997001 7/27/00	DMW-09 (06'-08') I997002 7/27/00	DMW-09 (10'-12') I997003 7/27/00	DMW-09 (26'-28') J007001 8/2/00	DMW-10 (02'-04') J001001 7/31/00	DMW-10 (08'-10') J001002 7/31/00	DMW-10 (10'-12') J001003 7/31/00	DMW-10 (24'-26') J007002 8/2/00	DMW-11 (04'-06') J001006 7/31/00	DMW-11 (06'-08') J001008 7/31/00	DMW-11 (24'-26') J008001 8/3/00
Chloride	mg/kg	1000	**1110**	**1530**	**3160**	650	**3020**	**1630**	**2550**	888	**1810**	**2870**	**1630**
Cyanide, Total	mg/kg	0.4	**2.76**	**0.89**	0.1 ND	10 ND	**2.91**	**1.04**	0.206	0.1 ND	**1.61**	**3.16**	0.2 ND
Nitrogen, Ammonia	mg/kg	0.58	17 ND*	**50**	17 ND*	**60**	**17**	**60**	**30**	**17**	17 ND*	**23**	16 ND*

+ Source - Operational Memorandum No. 18
or MDEQ Background Value.
Bold results indicate GSI Criterion exceedance.
* Indicates laboratory non-detect with MDL
greater than GSI criterion.
ND - Non-Detect (Not reported above laoratory
detection limits).
N/A - Not analyzed

Table 7
BASF Riverview, Michigan
Soil Samples
GSI Criteria Comparison
Printed: 1/31/0

URS

VOLATILE ORGANICS	SAMPLE #	GSI Criteria+	DMW-110 (04'-06') J001007 7/31/00	DMW-12 (04'-06') J002007 8/1/00	DMW-12 (06'-08') J002004 8/1/00	DMW-12 (10'-12') J002005 8/1/00	DMW-12 (18'-20') J002006 8/1/00	DMW-12 (28'-30') J008004 8/3/00	DMW-120 (28'-30') J008003 8/3/00	DMW-13 (04'-06') J002001 7/31/00	DMW-13 (06'-08') J002002 7/31/00	DMW-13 (10'-12') J002003 7/31/00	DMW-13 (26'-28') J008002 8/3/00
1,2-Dichlorobenzene	mg/kg	0.36	0.2 ND	0.1 ND	**1.2**	0.3 ND	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.2 ND	0.1 ND
1,2-Dichloroethane	mg/kg	0.12	0.2 ND*	0.2 ND*	0.3 ND*	0.4 ND*	0.3 ND*	0.2 ND*	0.2 ND*	0.2 ND*	0.3 ND*	0.2 ND*	0.2 ND*
1,2-Dichloropropane	mg/kg	0.18	0.1 ND	0.1 ND	0.2 ND*	0.2 ND*	0.2 ND*	0.1 ND	0.1 ND	0.1 ND	**0.71**	0.1 ND	0.1 ND
1,4-Dichlorobenzene	mg/kg	0.29	0.1 ND	0.08 ND	**6.8**	0.2 ND	0.1 ND	0.08 ND	0.09 ND	0.09 ND	0.1 ND	0.1 ND	0.07 ND
Acetone	mg/kg	34	**440**	1 ND	2 ND	3 ND	2 ND	3 ND	2 ND	2 ND	2 ND	2 ND	1 ND
Benzene	mg/kg	0.24	0.21	0.03 ND	0.05 ND	0.07 ND	0.05 ND	0.03 ND	0.03 ND	0.04 ND	**0.24**	0.04 ND	**0.5**
Ethylbenzene	mg/kg	0.36	0.2	0.09 ND	0.1 ND	0.2 ND	0.1 ND	0.09 ND	0.1 ND	0.1 ND	0.2	0.1 ND	**0.66**
m,p-Xylene	mg/kg	0.7	**0.9**	0.04 ND	0.07 ND	0.51	0.06 ND	0.04 ND	0.21	0.05 ND	0.61	0.06 ND	**1.8**
Methylene chloride	mg/kg	0.94	**27**	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.1 ND
o-Xylene	mg/kg	0.7	0.25	0.05 ND	0.08 ND	0.1 ND	0.07 ND	0.05 ND	0.06 ND	0.06 ND	0.38	0.07 ND	0.63
Toluene	mg/kg	2.8	2.7	0.04 ND	0.07 ND	0.09 ND	0.06 ND	0.04 ND	0.05 ND	0.05 ND	0.66	0.06 ND	0.22
Trichloroethene	mg/kg	0.58	0.1 ND	0.1 ND	0.2 ND	0.2 ND	0.2 ND	0.1 ND	0.1 ND	0.1 ND	**0.89**	0.1 ND	0.1 ND
Vinyl chloride	mg/kg	0.3	0.08 ND	0.06 ND	0.09 ND	0.1 ND	0.09 ND	0.06 ND	0.06 ND	0.08 ND	0.1 ND	0.08 ND	0.06 ND
Xylenes, total	mg/kg	0.7	**1.15**	0.04 ND	0.07 ND	0.51	0.06 ND	0.05 ND	0.21	0.06 ND	**0.99**	0.06 ND	**2.43**

SEMIVOLATILE	SAMPLE #	GSI Criteria+	DMW-110 (04'-06') J001007 7/31/00	DMW-12 (04'-06') J002007 8/1/00	DMW-12 (06'-08') J002004 8/1/00	DMW-12 (10'-12') J002005 8/1/00	DMW-12 (18'-20') J002006 8/1/00	DMW-12 (28'-30') J008004 8/3/00	DMW-120 (28'-30') J008003 8/3/00	DMW-13 (04'-06') J002001 7/31/00	DMW-13 (06'-08') J002002 7/31/00	DMW-13 (10'-12') J002003 7/31/00	DMW-13 (26'-28') J008002 8/3/00
2,4,6-Trichlorophenol	mg/kg	0.33	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.1 ND
Acenaphthene	mg/kg	4.4	0.109	0.1 ND	0.1 ND	1.11	0.1 ND	0.1 ND	0.1 ND	0.1 ND	**5.74**	0.185	0.1 ND
Carbazole	mg/kg	1.1	0.169	0.1 ND	0.1 ND	**1.21**	0.1 ND	0.1 ND	0.1 ND	0.1 ND	**4.27**	0.28	0.1 ND
Dibenzofuran	mg/kg	1.7	0.229	0.1 ND	0.256	**3.65**	0.1 ND	0.1 ND	0.1 ND	0.1 ND	**35.8**	0.968	0.1 ND
Fluoranthene	mg/kg	5.5	1.21	0.1 ND	0.81	**14.3**	0.1 ND	0.1 ND	0.1 ND	0.151	**67**	2.31	0.1 ND
Fluorene	mg/kg	5.3	0.328	0.1 ND	0.191	3.21	0.1 ND	0.1 ND	0.1 ND	0.1 ND	**35.2**	1.05	0.1 ND
Hexachlorobutadiene	mg/kg	0.33	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.1 ND	0.2 ND	0.1 ND	**38.2**	0.1 ND	0.1 ND
Isophorone	mg/kg	6.2	0.1 ND	0.1 ND	0.1 ND	**8.6**	0.1 ND	0.1 ND	2.94	0.1 ND	0.1 ND	0.1 ND	0.1 ND
Naphthalene	mg/kg	0.87	**0.906**	0.1 ND	0.192	**2.29**	0.1 ND	0.1 ND	0.1 ND	0.1 ND	**176**	**3.14**	0.1 ND
Pentachlorophenol	mg/kg	0.036	0.3 ND*	0.2 ND*	0.3 ND*	0.3 ND	0.3 ND*	0.2 ND*	0.2 ND*	0.2 ND*	0.3 ND*	0.3 ND*	0.2 ND*
Phenanthrene	mg/kg	2.3	1.53	0.1 ND	1.28	**20.3**	0.1 ND	0.1 ND	0.1 ND	0.114	**100**	**3.11**	0.1 ND

		GSI Criteria+	DMW-110 (04'-06') J001007 7/31/00	DMW-12 (04'-06') J002007 8/1/00	DMW-12 (06'-08') J002004 8/1/00	DMW-12 (10'-12') J002005 8/1/00	DMW-12 (18'-20') J002006 8/1/00	DMW-12 (28'-30') J008004 8/3/00	DMW-120 (28'-30') J008003 8/3/00	DMW-13 (04'-06') J002001 7/31/00	DMW-13 (06'-08') J002002 7/31/00	DMW-13 (10'-12') J002003 7/31/00	DMW-13 (26'-28') J008002 8/3/00
Arsenic	mg/kg	16	7.9	1.3	**17.3**	**20**	8.9	7.6	6.8	11	12.1	2.3	6.7
Barium	mg/kg	75	**122**	3.5	**138**	**118**	50	69.4	64	**124**	**180**	17.1	67.3
Cadmium	mg/kg	1.2	0.6	0.08	**2.6**	**1.4**	0.4	0.2	0.2	0.6	0.6	0.07	0.1
Chromium	mg/kg	18	**19**	1.5	**31.3**	**40.4**	17.8	16.9	**18.1**	**34.9**	**24.1**	8	15.7
Copper	mg/kg	32	**32**	3.8	**288**	**151**	23.9	22.3	23.8	**113**	**70.2**	8.1	20.1
Lead	mg/kg	21	**62.8**	3.9	**387**	**805**	14.9	10.3	8.1	**161**	**190**	9.8	9.9
Mercury	mg/kg	0.13	**2.52**	**0.15**	**2.19**	**0.25**	0.1	0.05 ND	0.05 ND	**33.7**	**11.1**	**0.23**	0.06
Selenium	mg/kg	0.41	0.3 ND	0.5 ND	**0.7**	**1.2**	1 ND	0.2 ND	0.2 ND	0.3 ND	2 ND	0.3 ND	0.2 ND
Zinc	mg/kg	47	**120**	5.8	**298**	**230**	**62.7**	**47.9**	**52.6**	**114**	**192**	22.9	44.5

INORGANICS	SAMPLE #	GSI Criteria+	DMW-110 (04'-06') J001007 7/31/00	DMW-12 (04'-06') J002007 8/1/00	DMW-12 (06'-08') J002004 8/1/00	DMW-12 (10'-12') J002005 8/1/00	DMW-12 (18'-20') J002006 8/1/00	DMW-12 (28'-30') J008004 8/3/00	DMW-120 (28'-30') J008003 8/3/00	DMW-13 (04'-06') J002001 7/31/00	DMW-13 (06'-08') J002002 7/31/00	DMW-13 (10'-12') J002003 7/31/00	DMW-13 (26'-28') J008002 8/3/00
Chloride	mg/kg	1000	**1590**	**1590**	**2620**	**1440**	**2450**	**1400**	**1580**	**1980**	**1450**	**1120**	**1620**
Cyanide, Total	mg/kg	0.4	**0.506**	0.1 ND	**2.82**	**1.72**	**0.446**	0.2 ND	**6.1**	0.124	0.361	**0.899**	0.2 ND
Nitrogen, Ammonia	mg/kg	0.58	17 ND*	17 ND*	**27**	**30**	**50**	16 ND*	**16**	**37**	17 ND*	**87**	16 ND*

+ Source - Operational Memorandum No. 18
or MDEQ Background Value.
Bold results indicate GSI Criterion exceedance.
* Indicates laboratory non-detect with MDL
greater than GSI criterion.
ND - Non-Detect (Not reported above laoratory
detection limits).
N/A - Not analyzed

Table 7
BASF Riverview, Michigan
Soil Samples
GSI Criteria Comparison
Printed: 1/31/0

URS

VOLATILE ORGANICS	SAMPLE #	GSI Criteria+	IMW-01 (02'-04') J008010 8/7/00	IMW-01 (06'-08') J008011 8/7/00	IMW-05 (02'-04') J008022 8/8/00	IMW-05 (04'-06') J008021 8/8/00	IMW-06 (02'-04') J008017 8/8/00	IMW-06 (06'-08') J008018 8/8/00	IMW-060 (06'-08') J008019 8/8/00	SMW-04 (10'-12') J008006 8/4/00	SMW-14 (06'-08') J008009 8/7/00	SMW-15 (04'-06') J008008 8/7/00	SMW-16 (0'-02') J021001 8/9/00
1,2-Dichlorobenzene	mg/kg	0.36	0.1 ND	0.2 ND	0.3 ND	0.2 ND	0.2 ND	0.2 ND	0.3 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
1,2-Dichloroethane	mg/kg	0.12	0.2 ND*	0.2 ND*	0.3 ND*	0.3 ND	0.4 ND	**2.5**	**4**	0.2 ND*	0.2 ND*	0.2 ND*	0.3 ND*
1,2-Dichloropropane	mg/kg	0.18	0.1 ND	0.1 ND	0.2 ND*	0.2 ND*	0.2 ND*	**0.69**	**0.92**	0.1 ND	0.1 ND	0.1 ND	0.2 ND
1,4-Dichlorobenzene	mg/kg	0.29	0.08 ND	0.1 ND	0.2 ND	0.2 ND*	0.2 ND*	0.1 ND	0.2 ND	0.08 ND	0.07 ND	0.08 ND	0.08 ND
Acetone	mg/kg	34	20	3 ND	4 ND	4 ND	4 ND	5 ND	**35**	2 ND	2 ND	2 ND	2 ND
Benzene	mg/kg	0.24	0.03 ND	0.04 ND	0.21	0.06 ND	0.07 ND	0.06 ND	0.07 ND	0.04 ND	0.04 ND	0.04 ND	0.06 ND
Ethylbenzene	mg/kg	0.36	0.09 ND	0.1 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.09 ND	0.09 ND	0.1 ND	0.1 ND
m,p-Xylene	mg/kg	0.7	0.05 ND	0.05 ND	0.19	0.2	0.09 ND	0.08 ND	0.19	0.05 ND	0.04 ND	0.05 ND	0.05 ND
Methylene chloride	mg/kg	0.94	0.1 ND	0.1 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	**5.7**	**30**	0.1 ND	0.1 ND	0.2 ND
o-Xylene	mg/kg	0.7	0.05 ND	0.07 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.06 ND	0.05 ND	0.06 ND	0.06 ND
Toluene	mg/kg	2.8	0.05 ND	0.05 ND	0.12	0.22	0.09 ND	0.34	0.55	0.05 ND	0.04 ND	0.05 ND	0.05 ND
Trichloroethene	mg/kg	0.58	0.1 ND	0.1 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.2 ND
Vinyl chloride	mg/kg	0.3	0.07 ND	0.08 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	**1.2**	0.07 ND	0.06 ND	0.08 ND	0.1 ND
Xylenes, total	mg/kg	0.7	0.05 ND	0.07 ND	0.19	0.2	0.09 ND	0.08 ND	0.19	0.05 ND	0.05 ND	0.06 ND	0.05 ND

SEMIVOLATILE	SAMPLE #	GSI Criteria+	IMW-01 (02'-04') J008010 8/7/00	IMW-01 (06'-08') J008011 8/7/00	IMW-05 (02'-04') J008022 8/8/00	IMW-05 (04'-06') J008021 8/8/00	IMW-06 (02'-04') J008017 8/8/00	IMW-06 (06'-08') J008018 8/8/00	IMW-060 (06'-08') J008019 8/8/00	SMW-04 (10'-12') J008006 8/4/00	SMW-14 (06'-08') J008009 8/7/00	SMW-15 (04'-06') J008008 8/7/00	SMW-16 (0'-02') J021001 8/9/00
2,4,6-Trichlorophenol	mg/kg	0.33	0.1 ND	0.2 ND	0.3 ND	0.9 ND	0.2 ND	0.2 ND	0.3 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
Acenaphthene	mg/kg	4.4	0.1 ND	0.2 ND	0.2 ND	0.3 ND	0.2 ND	0.532	0.393	0.1 ND	0.1 ND	0.1 ND	0.1 ND
Carbazole	mg/kg	1.1	0.1 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	**1.57**	0.995	0.1 ND	0.1 ND	0.1 ND	0.1 ND
Dibenzofuran	mg/kg	1.7	0.1 ND	0.2 ND	0.343	1.05	0.2 ND	**2.44**	**1.88**	0.1 ND	0.1 ND	0.1 ND	0.1 ND
Fluoranthene	mg/kg	5.5	0.1 ND	0.371	**5.52**	3.92	0.346	**16.3**	4.64	0.376	0.151	0.1 ND	1.95
Fluorene	mg/kg	5.3	0.1 ND	0.2 ND	0.74	1.21	0.2 ND	3.68	1.97	0.1 ND	0.1 ND	0.1 ND	0.1 ND
Hexachlorobutadiene	mg/kg	0.33	0.1 ND	0.3 ND	0.5 ND*	1 ND	0.2 ND	0.3 ND	0.5 ND*	0.2 ND	0.1 ND	0.1 ND	0.1 ND
Isophorone	mg/kg	6.2	0.1 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
Naphthalene	mg/kg	0.87	0.1 ND	0.2 ND	0.639	**2.41**	0.441	**6.06**	**10**	0.223	0.237	0.1 ND	0.1 ND
Pentachlorophenol	mg/kg	0.036	0.2 ND*	0.4 ND*	0.5 ND*	1 ND*	0.3 ND*	0.3 ND*	0.5 ND*	0.3 ND*	0.2 ND*	0.3 ND*	0.2 ND*
Phenanthrene	mg/kg	2.3	0.1 ND	0.323	1.85	**3.16**	0.694	**18.6**	**6.65**	0.5	0.21	0.1 ND	0.979

		GSI Criteria+	IMW-01 (02'-04') J008010 8/7/00	IMW-01 (06'-08') J008011 8/7/00	IMW-05 (02'-04') J008022 8/8/00	IMW-05 (04'-06') J008021 8/8/00	IMW-06 (02'-04') J008017 8/8/00	IMW-06 (06'-08') J008018 8/8/00	IMW-060 (06'-08') J008019 8/8/00	SMW-04 (10'-12') J008006 8/4/00	SMW-14 (06'-08') J008009 8/7/00	SMW-15 (04'-06') J008008 8/7/00	SMW-16 (0'-02') J021001 8/9/00
Arsenic	mg/kg	16	5.5	4.8	13.4	**24.7**	**97.8**	**32.5**	**19**	1.8	1.9	6.3	3.8 ND
Barium	mg/kg	75	43.8	65.9	**378**	**128**	**77.3**	**154**	**161**	69	**78.4**	69.4	**89.5**
Cadmium	mg/kg	1.2	0.2	0.3	**12.9**	**1.8**	0.2	**14.9**	**6.1**	0.6	0.2	0.2	0.5 ND
Chromium	mg/kg	18	12.5	**73.6**	**3350**	**348**	16	**69.8**	**68.3**	9	11.5	15.4	**944**
Copper	mg/kg	32	16.5	19.2	**5790**	**427**	15.2	**128**	**103**	11.9	8.8	20.5	22.8
Lead	mg/kg	21	**28.6**	**30.1**	**791**	**234**	18	**145**	**177**	18.4	6.9	8.7	17
Mercury	mg/kg	0.13	**0.37**	**0.15**	**22900**	**3440**	**2.61**	**4.46**	**3.6**	**1.59**	**0.14**	0.05 ND	0.05 ND
Selenium	mg/kg	0.41	**0.6**	0.2 ND	**82.1**	**6.2**	**0.8**	**0.5**	**1.1**	0.2 ND	**0.5**	0.2 ND	3.8 ND
Zinc	mg/kg	47	**54.7**	**81.7**	**855**	**256**	36.7	**546**	**415**	42.1	19.5	**54**	**63.8**

INORGANICS	SAMPLE #	GSI Criteria+	IMW-01 (02'-04') J008010 8/7/00	IMW-01 (06'-08') J008011 8/7/00	IMW-05 (02'-04') J008022 8/8/00	IMW-05 (04'-06') J008021 8/8/00	IMW-06 (02'-04') J008017 8/8/00	IMW-06 (06'-08') J008018 8/8/00	IMW-060 (06'-08') J008019 8/8/00	SMW-04 (10'-12') J008006 8/4/00	SMW-14 (06'-08') J008009 8/7/00	SMW-15 (04'-06') J008008 8/7/00	SMW-16 (0'-02') J021001 8/9/00
Chloride	mg/kg	1000	**1270**	**1240**	**1530**	**1410**	**1330**	**1240**	**1310**	**1570**	**1400**	**1490**	N/A
Cyanide, Total	mg/kg	0.4	0.2	0.3	**3.8**	**4.2**	**22.8**	**5.8**	**5.5**	**1**	**1.1**	**2.7**	0.3
Nitrogen, Ammonia	mg/kg	0.58	**49**	**182**	**28**	**47**	16 ND*	**22**	**39**	**37**	**161**	**24**	16 ND*

+ Source - Operational Memorandum No. 18
or MDEQ Background Value.
Bold results indicate GSI Criterion exceedance.
* Indicates laboratory non-detect with MDL
greater than GSI criterion.
ND - Non-Detect (Not reported above laoratory
detection limits).
N/A - Not analyzed

Table 7
BASF Riverview, Michigan
Soil Samples
GSI Criteria Comparison
Printed: 1/31/0

URS

VOLATILE ORGANICS	SAMPLE #	GSI Criteria+	SMW-17 (0'-02') J021002 8/9/00	SMW-18 (0'-02') J021003 8/9/00	SMW-19 (0'-02') J021004 8/9/00	SMW-20 (04'-06') J008016 8/7/00	SMW-21 (02'-04') J008012 8/7/00	SMW-22 (04'-06') J008013 8/7/00	SMW-23 (04'-06') J008020 8/8/00	TP-1 COMP J069007 8/31/00	TP-2 COMP J069002 8/30/00	TP-3 COMP J069005 8/31/00	TP-30 COMP J069006 8/31/00
1,2-Dichlorobenzene	mg/kg	0.36	0.2 ND	0.1 ND	0.1 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.09 ND	0.1 ND	0.09 ND	0.1 ND
1,2-Dichloroethane	mg/kg	0.12	0.2 ND*	0.3 ND*	0.4 ND*	0.3 ND*	0.3 ND*	0.2 ND*	0.3 ND*	0.2 ND*	0.3 ND*	0.2 ND*	0.2 ND*
1,2-Dichloropropane	mg/kg	0.18	0.1 ND	0.2 ND*	0.3 ND*	0.2 ND*	0.2 ND*	0.1 ND	0.2 ND*	0.1 ND	0.2 ND*	0.1 ND	0.1 ND
1,4-Dichlorobenzene	mg/kg	0.29	0.1 ND	0.06 ND	0.09 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.05 ND	0.08 ND	0.05 ND	0.08 ND
Acetone	mg/kg	34	2 ND	3 ND	3 ND	4 ND	5 ND	4 ND	4 ND	3 ND	4 ND	4 ND	**57**
Benzene	mg/kg	0.24	0.04 ND	0.06 ND	0.08 ND	0.05 ND	0.05 ND	0.04 ND	0.05 ND	0.03 ND	**0.8**	0.03 ND	**0.34**
Ethylbenzene	mg/kg	0.36	0.1 ND	**0.36**	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.08 ND	0.1 ND	**0.77**	**2.8**
m,p-Xylene	mg/kg	0.7	0.05 ND	0.67	0.06 ND	0.06 ND	0.28	0.05 ND	0.06 ND	0.22	0.18	**2.3**	**6.2**
Methylene chloride	mg/kg	0.94	0.1 ND	0.2 ND	0.2 ND	0.1 ND	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
o-Xylene	mg/kg	0.7	0.06 ND	0.52	0.08 ND	0.08 ND	0.08 ND	0.06 ND	0.08 ND	0.11	0.07 ND	**1.1**	**2.9**
Toluene	mg/kg	2.8	0.05 ND	0.65	0.06 ND	0.06 ND	1.2	0.05 ND	0.11	0.45	0.42	1.6	**3.7**
Trichloroethene	mg/kg	0.58	0.1 ND	0.2 ND	0.3 ND	0.2 ND	0.2 ND	0.1 ND	0.2 ND	0.43	0.2 ND	0.1 ND	0.1 ND
Vinyl chloride	mg/kg	0.3	0.07 ND	0.1 ND	0.1 ND	0.09 ND	0.1 ND	0.08 ND	0.09 ND	0.06 ND	0.09 ND	0.06 ND	0.08 ND
Xylenes, total	mg/kg	0.7	0.06 ND	**1.19**	0.06 ND	0.08 ND	0.28	0.06 ND	0.08 ND	0.33	0.18	**3.3**	**9.1**

SEMIVOLATILE	SAMPLE #	GSI Criteria+	SMW-17 (0'-02') J021002 8/9/00	SMW-18 (0'-02') J021003 8/9/00	SMW-19 (0'-02') J021004 8/9/00	SMW-20 (04'-06') J008016 8/7/00	SMW-21 (02'-04') J008012 8/7/00	SMW-22 (04'-06') J008013 8/7/00	SMW-23 (04'-06') J008020 8/8/00	TP-1 COMP J069007 8/31/00	TP-2 COMP J069002 8/30/00	TP-3 COMP J069005 8/31/00	TP-30 COMP J069006 8/31/00
2,4,6-Trichlorophenol	mg/kg	0.33	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.3 ND	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.1 ND
Acenaphthene	mg/kg	4.4	0.159	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.296	0.195	0.1 ND
Carbazole	mg/kg	1.1	0.114	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.108	0.1 ND	0.883	0.762	0.254
Dibenzofuran	mg/kg	1.7	0.156	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.252	0.1 ND	0.42	**1.76**	1.62	0.516
Fluoranthene	mg/kg	5.5	2.29	0.333	0.406	0.781	0.366	1.47	2.33	3.21	**6.26**	4.16	1.4
Fluorene	mg/kg	5.3	0.116	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.1 ND	0.229	2.06	1.86	0.568
Hexachlorobutadiene	mg/kg	0.33	0.1 ND	0.1 ND	0.2 ND	0.2 ND	0.5 ND*	0.3 ND	0.3 ND	0.1 ND	0.2 ND	0.1 ND	0.1 ND
Isophorone	mg/kg	6.2	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.44	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.1 ND
Naphthalene	mg/kg	0.87	0.167	0.213	0.323	0.308	0.2 ND	0.853	0.127	**0.969**	**5.78**	**9.13**	**2.25**
Pentachlorophenol	mg/kg	0.036	0.2 ND*	0.2 ND*	0.2 ND*	0.2 ND*	0.4 ND*	0.2 ND*	0.2 ND*	0.2 ND*	0.3 ND*	0.2 ND*	0.3 ND*
Phenanthrene	mg/kg	2.3	1.21	0.34	0.39	0.491	0.268	0.945	1.53	**2.36**	**9.77**	**5.45**	1.85

		GSI Criteria+	SMW-17 (0'-02') J021002 8/9/00	SMW-18 (0'-02') J021003 8/9/00	SMW-19 (0'-02') J021004 8/9/00	SMW-20 (04'-06') J008016 8/7/00	SMW-21 (02'-04') J008012 8/7/00	SMW-22 (04'-06') J008013 8/7/00	SMW-23 (04'-06') J008020 8/8/00	TP-1 COMP J069007 8/31/00	TP-2 COMP J069002 8/30/00	TP-3 COMP J069005 8/31/00	TP-30 COMP J069006 8/31/00
Arsenic	mg/kg	16	6	8.8	8.5	5.2	10.4	6.3	8	14.4	**27.5**	8.6	4
Barium	mg/kg	75	**109**	70.6	**411**	**96.5**	**146**	**86.9**	**99.8**	**375**	**88.9**	**111**	**93.6**
Cadmium	mg/kg	1.2	0.8	0.4	0.6	0.4	1.1	0.3	0.3	**2.6**	1	0.7	0.7
Chromium	mg/kg	18	**295**	**85.2**	**178**	**19.1**	**24**	**27**	**26.7**	**51.7**	**49.5**	17.4	17.5
Copper	mg/kg	32	**55.3**	21.4	**63.2**	27.6	**68.5**	**52.5**	28.1	**268**	**90.4**	**53.8**	**40.2**
Lead	mg/kg	21	**91.3**	**68.2**	**126**	**75.8**	**156**	**265**	**52.3**	**564**	**193**	**195**	**155**
Mercury	mg/kg	0.13	**0.25**	**0.14**	**0.77**	**4.9**	**7.29**	**20.2**	**6.66**	**2.95**	**0.84**	**6.63**	**18.1**
Selenium	mg/kg	0.41	1 ND	1 ND	1 ND	**0.6**	**0.8**	0.3	0.2 ND	1 ND	1 ND	0.2	0.2
Zinc	mg/kg	47	**276**	**105**	**207**	**62.7**	**254**	**63.7**	**80.5**	**508**	**257**	**112**	**76.5**

INORGANICS	SAMPLE #	GSI Criteria+	SMW-17 (0'-02') J021002 8/9/00	SMW-18 (0'-02') J021003 8/9/00	SMW-19 (0'-02') J021004 8/9/00	SMW-20 (04'-06') J008016 8/7/00	SMW-21 (02'-04') J008012 8/7/00	SMW-22 (04'-06') J008013 8/7/00	SMW-23 (04'-06') J008020 8/8/00	TP-1 COMP J069007 8/31/00	TP-2 COMP J069002 8/30/00	TP-3 COMP J069005 8/31/00	TP-30 COMP J069006 8/31/00
Chloride	mg/kg	1000	N/A	N/A	N/A	**1310**	**1320**	**1510**	**1380**	N/A	N/A	N/A	N/A
Cyanide, Total	mg/kg	0.4	**0.5**	0.3	**0.7**	0.2	**0.9**	**4.1**	**0.5**	**1.9**	**0.6**	**4.5**	**3**
Nitrogen, Ammonia	mg/kg	0.58	**60**	**35**	**30**	**35**	**74**	16 ND*	**102**	**32**	**135**	**83**	**135**

+ Source - Operational Memorandum No. 18 or MDEQ Background Value.
Bold results indicate GSI Criterion exceedance.
* Indicates laboratory non-detect with MDL greater than GSI criterion.
ND - Non-Detect (Not reported above laoratory detection limits).
N/A - Not analyzed

Table 7
BASF Riverview, Michigan
Soil Samples
GSI Criteria Comparison
Printed: 1/31/0

URS

VOLATILE ORGANICS	SAMPLE #	GSI Criteria+	TP-4 COMP J069004 8/31/00	TP-5 COMP J069001 8/30/00	TP-6 COMP J069003 8/31/00
1,2-Dichlorobenzene	mg/kg	0.36	0.1 ND	0.1 ND	0.1 ND
1,2-Dichloroethane	mg/kg	0.12	0.3 ND*	0.2 ND*	0.3 ND*
1,2-Dichloropropane	mg/kg	0.18	0.2 ND*	0.1 ND	0.2 ND*
1,4-Dichlorobenzene	mg/kg	0.29	0.08 ND	0.07 ND	0.09 ND
Acetone	mg/kg	34	4 ND	4 ND	5 ND
Benzene	mg/kg	0.24	0.05 ND	0.04 ND	0.05 ND
Ethylbenzene	mg/kg	0.36	0.1 ND	0.1 ND	0.1 ND
m,p-Xylene	mg/kg	0.7	0.06 ND	0.05 ND	0.06 ND
Methylene chloride	mg/kg	0.94	0.1 ND	0.1 ND	0.1 ND
o-Xylene	mg/kg	0.7	0.07 ND	0.06 ND	0.06 ND
Toluene	mg/kg	2.8	0.06 ND	0.05 ND	0.06 ND
Trichloroethene	mg/kg	0.58	0.2 ND	0.1 ND	0.2 ND
Vinyl chloride	mg/kg	0.3	0.09 ND	0.08 ND	0.09 ND
Xylenes, total	mg/kg	0.7	0.06 ND	0.05 ND	0.07 ND

SEMIVOLATILE	SAMPLE #	GSI Criteria+	TP-4 COMP J069004 8/31/00	TP-5 COMP J069001 8/30/00	TP-6 COMP J069003 8/31/00
2,4,6-Trichlorophenol	mg/kg	0.33	0.2 ND	0.1 ND	**0.623**
Acenaphthene	mg/kg	4.4	1.71	0.1 ND	0.3 ND
Carbazole	mg/kg	1.1	**7.97**	0.642	0.948
Dibenzofuran	mg/kg	1.7	**18.2**	1.25	**2.19**
Fluoranthene	mg/kg	5.5	**39.8**	**7.88**	**7.68**
Fluorene	mg/kg	5.3	**24**	1.11	2.25
Hexachlorobutadiene	mg/kg	0.33	0.2 ND	0.1 ND	0.3 ND
Isophorone	mg/kg	6.2	0.2 ND	0.1 ND	0.3 ND
Naphthalene	mg/kg	0.87	**41.5**	**3.74**	**10.9**
Pentachlorophenol	mg/kg	0.036	0.5 ND*	0.3 ND*	0.5 ND*
Phenanthrene	mg/kg	2.3	**49.4**	**7.51**	**10.2**

		GSI Criteria+	TP-4 COMP J069004 8/31/00	TP-5 COMP J069001 8/30/00	TP-6 COMP J069003 8/31/00
Arsenic	mg/kg	16	9.2	13.4	12
Barium	mg/kg	75	**124**	**139**	**135**
Cadmium	mg/kg	1.2	0.7	0.5	0.4
Chromium	mg/kg	18	**31.4**	**21.6**	**43.5**
Copper	mg/kg	32	**94**	**37.6**	**45.8**
Lead	mg/kg	21	**387**	**125**	**177**
Mercury	mg/kg	0.13	**175**	**10.4**	**46**
Selenium	mg/kg	0.41	1.3 ND	1 ND	1 ND
Zinc	mg/kg	47	**131**	**97.4**	**144**

INORGANICS	SAMPLE #	GSI Criteria+	TP-4 COMP J069004 8/31/00	TP-5 COMP J069001 8/30/00	TP-6 COMP J069003 8/31/00
Chloride	mg/kg	1000	N/A	N/A	N/A
Cyanide, Total	mg/kg	0.4	**2**	**4.9**	**0.9**
Nitrogen, Ammonia	mg/kg	0.58	**71**	**67**	**66**

+ Source - Operational Memorandum No. 18
or MDEQ Background Value.
Bold results indicate GSI Criterion exceedance.
* Indicates laboratory non-detect with MDL
greater than GSI criterion.
ND - Non-Detect (Not reported above laoratory
detection limits).
N/A - Not analyzed

Table 8
BASF Riverview, Michigan
Soil Samples
Detected PCBs
Printed: 1/31/0

URS

PCBs	SAMPLE#	DMW-09 (02'-04') I997001 7/27/00	DMW-09 (06'-08') I997002 7/27/00	DMW-09 (10'-12') I997003 7/27/00	DMW-09 (26'-28') J007001 8/2/00	DMW-10 (02'-04') J001001 7/31/00	DMW-10 (08'-10') J001002 7/31/00
Arochlor-1242	mg/kg	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
Arochlor-1248	mg/kg	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
Arochlor-1254	mg/kg	0.33 ND	0.33 ND	0.33 ND	0.33 ND	**2.84**	**2.23**
Arochlor-1260	mg/kg	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND

PCBs	SAMPLE#	DMW-10 (10'-12') J001003 7/31/00	DMW-10 (24'-26') J007002 8/2/00	DMW-11 (04'-06') J001006 7/31/00	DMW-11 (06'-08') J001008 7/31/00	DMW-11 (24'-26') J008001 8/3/00	DMW-110 (04'-06') J001007 7/31/00
Arochlor-1242	mg/kg	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
Arochlor-1248	mg/kg	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
Arochlor-1254	mg/kg	0.33 ND	0.33 ND	**1.4**	0.33 ND	0.33 ND	**0.715**
Arochlor-1260	mg/kg	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND

PCBs	SAMPLE#	DMW-12 (04'-06') J002007 8/1/00	DMW-12 (06'-08') J002004 8/1/00	DMW-12 (10'-12') J002005 8/1/00	DMW-12 (18'-20') J002006 8/1/00	DMW-12 (28'-30') J008004 8/3/00	DMW-120 (28'-30') J008003 8/3/00
Arochlor-1242	mg/kg	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
Arochlor-1248	mg/kg	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
Arochlor-1254	mg/kg	0.33 ND	**0.94**	**5.01**	0.33 ND	0.33 ND	0.33 ND
Arochlor-1260	mg/kg	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND

PCBs	SAMPLE#	DMW-13 (04'-06') J002001 7/31/00	DMW-13 (06'-08') J002002 7/31/00	DMW-13 (10'-12') J002003 7/31/00	DMW-13 (26'-28') J008002 8/3/00	IMW-01 (02'-04') J008010 8/7/00	IMW-01 (06'-08') J008011 8/7/00
Arochlor-1242	mg/kg	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
Arochlor-1248	mg/kg	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
Arochlor-1254	mg/kg	0.33 ND	**1.25**	0.33 ND	0.33 ND	0.33 ND	0.33 ND
Arochlor-1260	mg/kg	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND

+ Source - Operational Memorandum No. 18 or MDEQ Background Value.
ND - Non-Detect (Not reported above laoratory detection limits).
Items in bold are above detection limts.

Table 8
BASF Riverview, Michigan
Soil Samples
Detected PCBs
Printed: 1/31/0

URS

PCBs	SAMPLE#	IMW-05 (02'-04') J008022 8/8/00	IMW-05 (04'-06') J008021 8/8/00	IMW-06 (02'-04') J008017 8/8/00	IMW-06 (06'-08') J008018 8/8/00	IMW-060 (06'-08') J008019 8/8/00	SMW-04 (10'-12') J008006 8/4/00
Arochlor-1242	mg/kg	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
Arochlor-1248	mg/kg	**3.97**	**0.895**	0.33 ND	0.33 ND	0.33 ND	0.33 ND
Arochlor-1254	mg/kg	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
Arochlor-1260	mg/kg	0.33 ND	0.33 ND	0.33 ND	**1.35**	0.33 ND	0.33 ND

PCBs	SAMPLE#	SMW-14 (06'-08') J008009 8/7/00	SMW-15 (04'-06') J008008 8/7/00	SMW-16 (0'-02') J021001 8/9/00	SMW-17 (0'-02') J021002 8/9/00	SMW-18 (0'-02') J021003 8/9/00	SMW-19 (0'-02') J021004 8/9/00
Arochlor-1242	mg/kg	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
Arochlor-1248	mg/kg	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
Arochlor-1254	mg/kg	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
Arochlor-1260	mg/kg	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND

PCBs	SAMPLE#	SMW-20 (04'-06') J008016 8/7/00	SMW-21 (02'-04') J008012 8/7/00	SMW-22 (04'-06') J008013 8/7/00	SMW-23 (04'-06') J008020 8/8/00	TP-1 COMP J069007 8/31/00	TP-2 COMP J069002 8/30/00
Arochlor-1242	mg/kg	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
Arochlor-1248	mg/kg	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
Arochlor-1254	mg/kg	0.33 ND	0.33 ND	0.33 ND	0.33 ND	**7.15**	**2.36**
Arochlor-1260	mg/kg	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND

PCBs	SAMPLE#	TP-3 COMP J069005 8/31/00	TP-30 COMP J069006 8/31/00	TP-4 COMP J069004 8/31/00	TP-5 COMP J069001 8/30/00	TP-6 COMP J069003 8/31/00
Arochlor-1242	mg/kg	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
Arochlor-1248	mg/kg	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
Arochlor-1254	mg/kg	**0.364**	**0.362**	**1.13**	**2.76**	**0.363**
Arochlor-1260	mg/kg	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND

+ Source - Operational Memorandum No. 18 or MDEQ Background Value.
ND - Non-Detect (Not reported above laoratory detection limits).
Items in bold are above detection limts.

Table 9
BASF Riverview, Michigan
Soil Samples
Detected Dioxins
Printed: 1-31-01

URS

SAMPLE # / CONGENER	DMW-12 (04'-06') 2234283 8/1/00 ng/kg	IMW-05 (0'-02') 2234325 8/8/00 ng/kg	IMW-06 (0'-02') 2234317 8/8/00 ng/kg	IMW-13 (04'-06') 2234291 8/3/00 ng/kg	SMW-04 (04'-06') 2234309 8/3/00 ng/kg
1,2,3,4,6,7,8-HpCDD	0.92 J	3300	540	1700	1700
HpCDD, Total	2 J	6500	1100	3300	3300
1,2,3,4,6,7,8-HpCDF	0.28 ND	380	39	61	61
1,2,3,4,7,8,9-HpCDF	0.63 ND	52	7.9 J	4.9 J	4.9 J
HpCDF, Total	0.45 ND	1900	95	370	370
1,2,3,4,7,8-HxCDD	0.45 ND	19 ND	5 J	9.9	9.9
1,2,3,6,7,8-HxCDD	0.43 ND	100	22 J	50	50
1,2,3,7,8,9-HxCDD	0.46 ND	39	13 J	26	26
HxCDD, Total	0.45 ND	940	260	570	570
1,2,3,4,7,8-HxCDF	0.23 ND	110	17 J	8.9	8.9
1,2,3,6,7,8-HxCDF	0.25 ND	30	8.8 E	17 E	17 E
1,2,3,7,8,9-HxCDF	0.19 ND	16 ND	4.7 J	1.7 J	1.7 J
2,3,4,6,7,8-HxCDF	0.33 ND	25 I	4.4 I	5	5
HxCDF, Total	0.25 ND	560	65	110	110
1,2,3,7,8-PeCDD	0.4 ND	6.3 I	4.9 I	13	13
PeCDD, Total	0.4 ND	4.5 ND	8.1 J	83	83
1,2,3,7,8-PeCDF	0.29 ND	40	8.6 J	5.5	5.5
2,3,4,7,8-PeCDF	0.38 ND	33	8.3 J	4.7 J	4.7 J
PeCDF, Total	0.34 ND	180	47	30	30
2,3,7,8-TCDD	0.22 ND	2.6 ND	2.2 I	5.7	5.7
TCDD, Total	0.22 ND	21	7.2	27	27
2,3,7,8-TCDF	0.23 ND	56	10	6.9	6.9
TCDF, Total	0.23 ND	210	54	26	26
OCDD	9.6 BJ	25000	5000	18000	18000
OCDF	0.74 ND	1700	87	290	290

ND = Results reported below laboratory detection limits.
See Data Quality Assessment Report for qualified data.

Table 10
BASF Riverview, Michigan
Fill Samples
GSI Criteria Comparison
Printed: 1/31/0

URS

SEMIVOLATILE ORGANICS	SAMPLE #	GSI Criteria+	SB-01 (13_5'-19_5') I989001 7/26/00	SB-02 (24_5'-25') I989002 7/26/00	SB-09 (3_5'-8_5') I989003 7/26/00	SB-10 (16'-16_5') I989004 7/26/00
Naphthalene	mg/kg	0.87	0.544	0.785	**2.15**	0.233
Phenanthrene	mg/kg	2.3	0.955	1.46	**4.08**	0.76

METALS	SAMPLE #	GSI Criteria+	SB-01 (13_5'-19_5') I989001 7/26/00	SB-02 (24_5'-25') I989002 7/26/00	SB-09 (3_5'-8_5') I989003 7/26/00	SB-10 (16'-16_5') I989004 7/26/00
Barium	mg/kg	75	**158**	**119**	**125**	**134**
Cadmium	mg/kg	1.2	1.1	**1.4**	0.8	**1.9**
Chromium	mg/kg	18	**33.6**	**35.5**	**47.2**	**69.1**
Copper	mg/kg	32	27.4	**47.8**	**72.9**	**53.8**
Lead	mg/kg	21	**129**	**38.8**	**181**	**335**
Mercury	mg/kg	0.13	**4.78**	**2.21**	**1.91**	**2.07**
Selenium	mg/kg	0.41	0.3 ND	0.3 ND	0.4 ND	**0.9**
Zinc	mg/kg	47	**472**	**141**	**107**	**138**

INORGANICS	SAMPLE #	GSI Criteria+	SB-01 (13_5'-19_5') I989001 7/26/00	SB-02 (24_5'-25') I989002 7/26/00	SB-09 (3_5'-8_5') I989003 7/26/00	SB-10 (16'-16_5') I989004 7/26/00
Chloride	mg/kg	1000	**1640**	N/A	**1700**	**8280**
Cyanide, Total	mg/kg	0.4	0.34	**1.24**	**1.27**	**7.39**
Nitrogen, Ammonia	mg/kg	0.58	**27**	N/A	17 ND*	**77**

ND - Non-Detect (Not reported above laoratory detection limits).
N/A - Not analyzed
* Indicates laboratory non-detect with MDL greater than GSI criterion.

Table 11
BASF Riverview, Michigan
Groundwater Samples
GSI Criteria Comparison
Printed: 1/31/0

URS

VOLATILE ORGANICS (SAMPLE #)		GSI Criteria+	BMW-1 J062003 8/25/00	DMW-01 J030009 8/11/00	DMW-02 J011016 8/9/00	DMW-03 J030019 8/15/00	DMW-04 J030014 8/14/00	DMW-05 J011019 8/9/00	DMW-06 J011018 8/9/00	DMW-09 J062005 8/28/00	DMW-090 J062006 8/28/00	DMW-10 J053019 8/23/00	DMW-11 J062001 8/24/00	DMW-12 J062008 8/29/00	DMW-13 J062002 8/24/00	IMW-01 J042011 8/18/00	IMW-05 J042001 8/16/00	IMW-06 J042008 8/17/00	IMW-09 J042010 8/18/00	IMW-10 J042005 8/17/00	IMW-11 J053002 8/22/00	IMW-110 J053003 8/22/00	IMW-12 J053001 8/22/00	IMW-13 J053007 8/22/00	MW-A J030013 8/11/00	MW-B J030004 8/10/00	MW-C J030005 8/10/00
1,2-Dichlorobenzene	ug/L	16	2 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	3 ND	3 ND	3 ND	**24**	1 ND	2 ND	2 ND	2 ND	5.4	20 ND*	1 ND
1,2-Dichloroethane	ug/L	6	4 ND	1 ND	1 ND	1 ND	1 ND	1 ND	**19**	1 ND	1 ND	1 ND	1 ND	1 ND	2 ND	22	3 ND	**47**	3 ND	**43**	3 ND	3 ND	3 ND	7 ND*	2 ND	30 ND*	2 ND
1,2-Dichloropropane	ug/L	9.1	3 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	8.4	**16**	**20**	5.4	**39**	2 ND	2 ND	2 ND	**22**	**13**	20 ND*	1 ND
Acetone	ug/L	1700	90 ND	5 ND	7 ND	7 ND	7 ND	10 ND	7 ND	10 ND	10 ND	10 ND	20 ND	20 ND	30 ND	10 ND	**12000**	**1800**	1100	**2300**	930	1100	730	1500	760	**12000**	1600
Benzene	ug/L	12	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1.7	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	**17**	7.7	**97**	**40**	5.3	4.4	**14**	**150**	**120**	5 ND	2.8
Chlorobenzene	ug/L	47	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	17	7 ND	1 ND
Ethylbenzene	ug/L	18	2 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	2 ND	2 ND	2 ND	2 ND	3.9	4.5	1 ND	10	2	20 ND*	1 ND
m,p-Xylene	ug/L	35	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1.7	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	4.4	1 ND	6.1	16	5.3	5.7	3.4	28	6.5	7 ND	1 ND
Methylene chloride	ug/L	47	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND	**1400**	**100**	5 ND	**400**	**90**	**89**	**87**	**72**	28	**6400**	**360**
o-Xylene	ug/L	35	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	5.7	1 ND	5.2	9.3	4	4.5	3.2	21	6.6	9 ND	1 ND
Styrene	ug/L	80	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	4 ND	7 ND	1 ND
Tetrachloroethene	ug/L	11	3 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	3 ND	3 ND	2 ND	4.8	2 ND	2 ND	2 ND	2 ND	1 ND	20 ND	1 ND
Toluene	ug/L	140	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	2.8	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	9.5	13	62	110	9.8	10	21	130	40	15	1 ND
Trichloroethene	ug/L	29	3 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	1 ND	20 ND	1 ND
Vinyl chloride	ug/L	15	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	**24**	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	**16**	5	**70**	**27**	**27**	2 ND	2 ND	2 ND	10 ND	2 ND
Xylenes, total	ug/L	35	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	10.1	1 ND	11.3	25.3	9.3	10.2	6.6	**49**	13.1	9 ND	1 ND

SEMIVOLATILE ORGANICS (SAMPLE #)		GSI Criteria+	BMW-1 J062003 8/25/00	DMW-01 J030009 8/11/00	DMW-02 J011016 8/9/00	DMW-03 J030019 8/15/00	DMW-04 J030014 8/14/00	DMW-05 J011019 8/9/00	DMW-06 J011018 8/9/00	DMW-09 J062005 8/28/00	DMW-090 J062006 8/28/00	DMW-10 J053019 8/23/00	DMW-11 J062001 8/24/00	DMW-12 J062008 8/29/00	DMW-13 J062002 8/24/00	IMW-01 J042011 8/18/00	IMW-05 J042001 8/16/00	IMW-06 J042008 8/17/00	IMW-09 J042010 8/18/00	IMW-10 J042005 8/17/00	IMW-11 J053002 8/22/00	IMW-110 J053003 8/22/00	IMW-12 J053001 8/22/00	IMW-13 J053007 8/22/00	MW-A J030013 8/11/00	MW-B J030004 8/10/00	MW-C J030005 8/10/00
1,2,4,5-Tetrachlorobenzene	ug/L	2.8	2 ND*	2 ND*	4 ND*	4 ND*	2 ND*	4 ND*	4 ND*	2 ND*	2 ND*	2 ND*	2 ND*	2 ND*	2 ND*	2 ND*	7 ND*	4 ND*	2 ND*	4 ND*	4 ND*	4 ND*	2 ND*	4 ND*	2 ND*	10 ND*	2 ND*
2,4,6-Trichlorophenol	ug/L	4.4	2 ND	2 ND	4 ND	4 ND	2 ND	4 ND	4 ND	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	**55.3**	6 ND	**26.4**	**8.31**	4 ND	4 ND	3.31	**13.7**	2 ND	**63.2**	**5.45**
2,4-Dichlorophenol	ug/L	19	2 ND	2 ND	4 ND	4 ND	2 ND	4 ND	4 ND	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	**50.8**	4 ND	2 ND	6.84	4 ND	4 ND	2 ND	**34.1**	2 ND	**44.8**	2 ND
2,4-Dimethylphenol	ug/L	380	2 ND	2 ND	4 ND	4 ND	2 ND	4 ND	4 ND	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	4 ND	**800**	2 ND	228	123	173	2 ND	16.8	2 ND	82	20.5
2-Chlorophenol	ug/L	22	2 ND	2 ND	4 ND	4 ND	2 ND	4 ND	4 ND	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	**25.4**	4 ND	2 ND	4 ND	4 ND	4 ND	2 ND	12.6	2 ND	21.4	2.58
Acenaphthene	ug/L	19	2 ND	2 ND	4 ND	4 ND	2 ND	4 ND	4 ND	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	4 ND	**20.3**	2 ND	12.8	4 ND	4 ND	2 ND	6.38	2 ND	**23.8**	2 ND
Aniline	ug/L	20	2 ND	2 ND	4 ND	4 ND	2 ND	4 ND	4 ND	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	4 ND	4 ND	2 ND	4 ND	4 ND	4 ND	2 ND	4 ND	2.31	5 ND	2 ND
bis(2-Ethylhexyl)phthalate	ug/L	32	2 ND	2 ND	4 ND	**246**	10.7	**868**	**204**	2 ND	2 ND	2 ND	3.98	2 ND	2 ND	**42**	**159**	**267**	2 ND	**527**	4 ND	4 ND	**94.5**	**498**	30.8	**159**	2 ND
Carbazole	ug/L	10	2 ND	2 ND	4 ND	4 ND	2 ND	4 ND	**10.8**	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	**43.1**	**173**	2 ND	**76.7**	4 ND	4 ND	2 ND	**25.3**	2 ND	**102**	2.99
Dibenzofuran	ug/L	4	2 ND	2 ND	4 ND	4 ND	2 ND	4 ND	**5.77**	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	**27.8**	**90**	2 ND	**56.4**	4 ND	4 ND	2 ND	**26.5**	2 ND	**67.4**	2 ND
Fluoranthene	ug/L	1.6	2 ND*	2 ND*	4 ND*	4 ND*	2 ND*	4 ND*	4 ND*	2 ND*	2 ND*	2 ND*	2 ND*	2 ND*	2 ND*	2 ND*	**88.4**	**235**	2 ND*	**84.3**	**9.7**	**10.9**	**2.4**	**68.7**	2 ND*	**230**	2 ND*
Fluorene	ug/L	12	2 ND	2 ND	4 ND	4 ND	2 ND	4 ND	5.51	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	**40.6**	**137**	2 ND	**51.5**	4 ND	4 ND	2 ND	**34.9**	2 ND	**101**	2 ND
Hexachlorobutadiene	ug/L	0.053	2 ND*	2 ND*	4 ND*	4 ND*	2 ND*	4 ND*	4 ND*	2 ND*	2 ND*	2 ND*	2 ND*	2 ND*	2 ND*	2 ND*	6 ND*	6 ND*	2 ND*	4 ND*	4 ND*	4 ND*	2 ND*	4 ND*	2 ND*	10 ND*	2 ND*
m,p-Cresol	ug/L	71	6 ND	6 ND	10 ND	10 ND	6 ND	10 ND	10 ND	6 ND	6 ND	6 ND	6 ND	6 ND	6 ND	6 ND	**416**	**2330**	12	**895**	**326**	**315**	31.3	**419**	36	**609**	55.4
Naphthalene	ug/L	13	2 ND	2 ND	4 ND	4 ND	2 ND	4 ND	**279**	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	**142**	**802**	**14.3**	**525**	4.71	5.41	3.69	**248**	**17.3**	**451**	**16.5**
o-Cresol	ug/L	71	2 ND	2 ND	4 ND	4 ND	2 ND	4 ND	4 ND	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	**59.1**	**681**	2 ND	**259**	**81.8**	**75.2**	3.84	**45.7**	14	**121**	17.4
Pentachlorophenol	ug/L	1.8	4 ND*	4 ND*	8 ND*	8 ND*	4 ND*	8 ND*	8 ND*	4 ND*	4 ND*	4 ND*	4 ND*	4 ND*	4 ND*	4 ND*	**226**	**267**	4 ND*	**50.8**	**41.8**	**42.8**	**10.2**	**38.8**	**23.2**	**259**	**24.1**
Phenanthrene	ug/L	5	2 ND	2 ND	4 ND	4 ND	2 ND	4 ND	**5.62**	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	**125**	**430**	2 ND	**186**	**8.8**	**9.92**	**6.03**	**126**	2 ND	**352**	3.35
Phenol	ug/L	210	2 ND	2 ND	4 ND	4 ND	2 ND	4 ND	9.82	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	**467**	**2500**	20.2	**980**	**216**	**230**	179	**611**	30.5	**437**	25.5

PCBs (SAMPLE #)		GSI Criteria+	BMW-1 J062003 8/25/00	DMW-01 J030009 8/11/00	DMW-02 J011016 8/9/00	DMW-03 J030019 8/15/00	DMW-04 J030014 8/14/00	DMW-05 J011019 8/9/00	DMW-06 J011018 8/9/00	DMW-09 J062005 8/28/00	DMW-090 J062006 8/28/00	DMW-10 J053019 8/23/00	DMW-11 J062001 8/24/00	DMW-12 J062008 8/29/00	DMW-13 J062002 8/24/00	IMW-01 J042011 8/18/00	IMW-05 J042001 8/16/00	IMW-06 J042008 8/17/00	IMW-09 J042010 8/18/00	IMW-10 J042005 8/17/00	IMW-11 J053002 8/22/00	IMW-110 J053003 8/22/00	IMW-12 J053001 8/22/00	IMW-13 J053007 8/22/00	MW-A J030013 8/11/00	MW-B J030004 8/10/00	MW-C J030005 8/10/00
Arochlor-1242	ug/L		0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
Arochlor-1248	ug/L		0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	4	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	3.74	0.2 ND
Arochlor-1254	ug/L		0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	14.3	0.2 ND	48.2	0.2 ND	0.2 ND	3.61	4.35	0.2 ND	0.2 ND	0.2 ND
Arochlor-1260	ug/L		0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
Total PCBs	ug/L	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**4**	**14.3**	ND	**48.2**	ND	ND	**3.61**	**4.35**	ND	**3.74**	ND

METALS (SAMPLE #)		GSI Criteria+	BMW-1 J062003 8/25/00	DMW-01 J030009 8/11/00	DMW-02 J011016 8/9/00	DMW-03 J030019 8/15/00	DMW-04 J030014 8/14/00	DMW-05 J011019 8/9/00	DMW-06 J011018 8/9/00	DMW-09 J062005 8/28/00	DMW-090 J062006 8/28/00	DMW-10 J053019 8/23/00	DMW-11 J062001 8/24/00	DMW-12 J062008 8/29/00	DMW-13 J062002 8/24/00	IMW-01 J042011 8/18/00	IMW-05 J042001 8/16/00	IMW-06 J042008 8/17/00	IMW-09 J042010 8/18/00	IMW-10 J042005 8/17/00	IMW-11 J053002 8/22/00	IMW-110 J053003 8/22/00	IMW-12 J053001 8/22/00	IMW-13 J053007 8/22/00	MW-A J030013 8/11/00	MW-B J030004 8/10/00	MW-C J030005 8/10/00
Arsenic	mg/L	0.05	0.004 ND	0.004 ND	0.004 ND	0.004 ND	0.004 ND	0.004 ND	0.025	0.004 ND	0.004 ND	0.004 ND	0.004 ND	0.004 ND	0.004 ND	0.005	**0.773**	**15.7**	**0.081**	**13.1**	**5.02**	**4.89**	**0.318**	**1.49**	**0.068**	**0.683**	**0.079**
Barium	mg/L	0.48	0.021	0.034	0.057	0.018	0.021	0.028	0.023	0.043	0.044	0.057	0.105	0.055	0.094	0.098	0.067	0.026	0.062	0.128	0.139	0.128	0.343	0.329	0.011	0.043	0.043
Cadmium	mg/L	0.0025	0.0005 ND	0.0005 ND	0.0005 ND	0.0005 ND	0.0005 ND	0.0005 ND	0.0005 ND	0.0005 ND	0.0005 ND	0.0005 ND	0.0005 ND	0.0005 ND	0.0005 ND	0.0005 ND	**0.006**	0.002 ND	0.0005 ND	0.002 ND	0.0005 ND	0.002 ND	0.002 ND	0.002 ND	0.0005 ND	0.0005 ND	0.0005 ND
Chromium	mg/L	0.08	0.004 ND	0.004 ND	0.004 ND	0.004 ND	0.004 ND	0.004 ND	0.004 ND	0.004 ND	0.004 ND	0.004 ND	0.007	0.012	0.004 ND	0.094	**0.197**	**0.255**	0.051	**0.405**	**0.901**	**0.857**	**1.22**	**0.684**	0.049	**0.194**	0.013
Copper	mg/L	0.097	0.004 ND	0.007	0.004 ND	0.004 ND	0.004 ND	0.006	0.004 ND	0.008	0.008	0.004 ND	0.011	0.011	0.004	0.011	0.078	0.022	0.032	0.016	0.028	0.04	0.014	0.032	0.004 ND	0.009	0.019
Lead	mg/L	0.011	0.002 ND	0.008	0.004	0.002 ND	0.002	0.004	0.004	0.007	0.008	0.002	0.005	0.006	0.01	0.004	**0.048**	0.025	**0.064**	**0.059**	0.008 ND	0.01	**0.02**	0.009	0.004	**0.014**	**0.019**
Mercury	mg/L	0.0000013	0.0002 ND*	0.0002 ND*	0.0002 ND*	0.0002 ND*	0.0002 ND*	0.0002 ND*	0.0002 ND*	0.0002 ND*	0.0002 ND*	0.0002 ND*	0.0002 ND*	0.0002 ND*	0.0002 ND*	0.0002 ND*	**0.0996**	**0.487**	**0.0219**	**0.487**	**0.0387**	**0.0494**	**0.0016**	**2.32**	**0.0021**	**0.019**	**0.0013**
Selenium	mg/L	0.005	0.004 ND	0.004 ND	0.004 ND	0.004 ND	0.004 ND	**0.005**	0.004 ND	0.004 ND	0.004 ND	0.004	0.004 ND	**0.006**	0.004 ND	0.004 ND	**0.01**	**0.013**	0.004 ND	**0.015**	**0.024**	**0.023**	**0.018**	**0.033**	0.004 ND	**0.008**	0.004 ND
Zinc	mg/L	0.13	0.01 ND	0.022	0.024	0.013	0.019	0.032	0.01 ND	0.071	0.066	0.013	0.027	0.02	0.018	0.01 ND	**0.206**	0.045	0.058	0.068	0.044	0.062	0.046	0.081	0.02	0.035	0.014

INORGANICS (SAMPLE #)		GSI Criteria+	BMW-1 J062003 8/25/00	DMW-01 J030009 8/11/00	DMW-02 J011016 8/9/00	DMW-03 J030019 8/15/00	DMW-04 J030014 8/14/00	DMW-05 J011019 8/9/00	DMW-06 J011018 8/9/00	DMW-09 J062005 8/28/00	DMW-090 J062006 8/28/00	DMW-10 J053019 8/23/00	DMW-11 J062001 8/24/00	DMW-12 J062008 8/29/00	DMW-13 J062002 8/24/00	IMW-01 J042011 8/18/00	IMW-05 J042001 8/16/00	IMW-06 J042008 8/17/00	IMW-09 J042010 8/18/00	IMW-10 J042005 8/17/00	IMW-11 J053002 8/22/00	IMW-110 J053003 8/22/00	IMW-12 J053001 8/22/00	IMW-13 J053007 8/22/00	MW-A J030013 8/11/00	MW-B J030004 8/10/00	MW-C J030005 8/10/00
Chloride	mg/L	50	**158**	**192**	**557**	**402**	**641**	**151**	**661**	**242**	**243**	**142**	**328**	N/A	**166**	**487**	**1100**	**827**	**849**	**949**	**933**	**835**	**1180**	**893**	**441**	**1010**	**197**
Cyanide, Total	mg/L	0.02	0.005 ND	0.005 ND	0.008	0.005 ND	0.005 ND	0.005 ND	**0.029**	0.005 ND	0.005 ND	0.005 ND	0.017	0.005 ND	0.005 ND	**0.039**	**3.3**	**9.28**	**1.12**	**15.7**	**5.95**	**6.04**	**16.5**	**7.62**	**0.78**	**2.91**	**5.65**
Nitrogen, Ammonia	mg/L	0.029	**0.67**	0.25 ND	**0.42**	**0.27**	**0.94**	**0.28**	**0.72**	**0.76**	**0.56**	**1.08**	**0.46**	N/A	**0.67**	**0.47**	**8.8**	**33.4**	**4.1**	**38.3**	**40.1**	**40.3**	**58.7**	**95.1**	**7.98**	**12.3**	**3.45**

Bold results indicate GSI Criterion exceedance.
N/A - Not analyzed
* Indicates laboratory non-detect with MDL greater than GSI criterion.
+ Source - Operational Memorandum No. 18 or MDEQ Background Value.
ND - Non-Detect (Not reported above laoratory detection limits).

Table 11
BASF Riverview, Michigan
Groundwater Samples
GSI Criteria Comparison
Printed: 1/31/0

URS

VOLATILE ORGANICS	SAMPLE #	GSI Criteria+	MW-D	MW-D0	MW-E	MW-G	MW-H	MW-I	MW-J	MW-K	PZ-1	PZ-2	PZ-3	PZ-4	PZ-5	PZ-6	SB-01	SB-02	SB-03	SMW-01	SMW-02	SMW-03	SMW-04	SMW-04-99	SMW-040	SMW-05	SMW-05-99
			J011012	J011013	J011017	J011007	J030020	J030021	J042003	J030015	J030006	J030011	J030012	J030002	J030003	J030001	J011011	J011009	J011015	J030018	J011010	J030010	J053017	J011003	J053016	J042002	J011004
			8/8/00	8/8/00	8/9/00	8/7/00	8/15/00	8/15/00	8/16/00	8/14/00	8/10/00	8/11/00	8/11/00	8/10/00	8/10/00	8/10/00	8/8/00	8/8/00	8/9/00	8/15/00	8/8/00	8/14/00	8/23/00	8/4/00	8/23/00	8/16/00	8/7/00
1,2-Dichlorobenzene	ug/L	16	6.6	8.6	1 ND	1 ND	2 ND	2 ND	3 ND	10 ND	3 ND	3 ND	1 ND	20 ND*	3 ND	4 ND	2 ND	1 ND	2 ND	3 ND	2 ND	1 ND	20 ND*	1 ND	30 ND*	3 ND	1 ND
1,2-Dichloroethane	ug/L	6	**120**	**130**	**27**	1 ND	3 ND	2 ND	3 ND	20 ND*	3 ND	3 ND	2 ND	30 ND*	5 ND	5 ND	3 ND	1 ND	4 ND	3 ND	3 ND	1 ND	30 ND*	1 ND	40 ND*	4 ND	1 ND
1,2-Dichloropropane	ug/L	9.1	**12**	**13**	2.3	1 ND	2 ND	1 ND	2 ND	9 ND	2 ND	2 ND	1 ND	20 ND*	3 ND	**22**	2 ND	1 ND	2 ND	5.4	2 ND	1 ND	20 ND*	1 ND	20 ND*	**21**	1 ND
Acetone	ug/L	1700	**2300**	**2500**	370	20 ND	20 ND	**6000**	**2600**	100 ND	20 ND	590	170	400 ND	60 ND	1100	30 ND	7 ND	450	350	20 ND	6 ND	**2000**	20 ND	600 ND	**11000**	20 ND
Benzene	ug/L	12	**26**	**28**	5.2	1 ND	1 ND	1 ND	3.9	**590**	**48**	**93**	**58**	**290**	**190**	**47**	3.2	1 ND	1 ND	1 ND	1 ND	1 ND	**140**	1 ND	**120**	**18**	1 ND
Chlorobenzene	ug/L	47	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	4 ND	1 ND	1 ND	1 ND	16	1 ND	43	1 ND	1 ND	4 ND	1 ND	1 ND	1 ND	19	1 ND	10 ND	1 ND	1 ND
Ethylbenzene	ug/L	18	4.1	5.4	1 ND	1 ND	1 ND	1 ND	2 ND	9 ND	2 ND	2 ND	1 ND	**19**	2 ND	3 ND	2 ND	1 ND	2 ND	2 ND	1 ND	1 ND	10 ND	1 ND	20 ND*	2 ND	1 ND
m,p-Xylene	ug/L	35	11	14	2	1 ND	1 ND	1 ND	1 ND	16	1 ND	9	1.9	**41**	5.8	4.8	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	7 ND	1 ND	20 ND	7.5	1 ND
Methylene chloride	ug/L	47	**320**	**330**	**72**	5 ND	**62**	5 ND	5 ND	**140**	5 ND	**66**	44	**610**	**91**	**300**	5 ND	5 ND	5 ND	**69**	5 ND	5 ND	**11000**	5 ND	**9600**	**990**	5 ND
o-Xylene	ug/L	35	7.2	8	1.1	1 ND	1 ND	1 ND	1 ND	13	1 ND	6	1.5	31	3.7	6.9	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	8 ND	1 ND	8 ND	7.9	1 ND
Styrene	ug/L	80	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	4 ND	1 ND	1 ND	1 ND	6 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	7 ND	1 ND	7 ND	1 ND	1 ND
Tetrachloroethene	ug/L	11	2.3	2.4	1.8	1 ND	2 ND	2 ND	3 ND	10 ND	2 ND	2 ND	1 ND	**34**	3 ND	3 ND	2 ND	1 ND	2 ND	2 ND	2 ND	1 ND	**110**	1 ND	20 ND	3 ND	1 ND
Toluene	ug/L	140	130	130	9.1	1 ND	1 ND	1 ND	4.9	**380**	15	86	29	**240**	44	11	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	62	1 ND	10 ND	13	1 ND
Trichloroethene	ug/L	29	2 ND	2 ND	1	1 ND	2 ND	1 ND	2 ND	10 ND	2 ND	2 ND	1 ND	20 ND	3 ND	3 ND	2 ND	1 ND	2 ND	2 ND	2 ND	1 ND	**220**	1 ND	**180**	2 ND	1 ND
Vinyl chloride	ug/L	15	**46**	**55**	9.9	2 ND	2 ND	2 ND	2 ND	6 ND	5.3	2 ND	2 ND	9 ND	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	10 ND	2 ND	10 ND	2 ND	2 ND
Xylenes, total	ug/L	35	18.2	22	3.1	1 ND	1 ND	1 ND	1 ND	29	1 ND	15	3.4	**72**	9.5	11.7	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	7 ND	1 ND	8 ND	15.4	1 ND

SEMIVOLATILE ORGANICS	SAMPLE #	GSI Criteria+	MW-D	MW-D0	MW-E	MW-G	MW-H	MW-I	MW-J	MW-K	PZ-1	PZ-2	PZ-3	PZ-4	PZ-5	PZ-6	SB-01	SB-02	SB-03	SMW-01	SMW-02	SMW-03	SMW-04	SMW-04-99	SMW-040	SMW-05	SMW-05-99
			J011012	J011013	J011017	J011007	J030020	J030021	J042003	J030015	J030006	J030011	J030012	J030002	J030008	J030001	J011011	J011009	J011015	J030018	J011010	J030010	J053017	J011003	J053016	J042002	J011004
			8/8/00	8/8/00	8/9/00	8/7/00	8/15/00	8/15/00	8/16/00	8/14/00	8/10/00	8/11/00	8/11/00	8/10/00	8/11/00	8/10/00	8/8/00	8/8/00	8/9/00	8/15/00	8/8/00	8/14/00	8/23/00	8/4/00	8/23/00	8/16/00	8/7/00
1,2,4,5-Tetrachlorobenzene	ug/L	2.8	4 ND*	4 ND*	4 ND*	2 ND*	2 ND*	2 ND*	4 ND*	4 ND*	4 ND*	4 ND*	2 ND*	10 ND*	4 ND*	4 ND*	4 ND*	4 ND*	4 ND*	2 ND*	4 ND*	2 ND*	2 ND*	2 ND*	2 ND*	2 ND*	2 ND*
2,4,6-Trichlorophenol	ug/L	4.4	4 ND	4 ND	4 ND	2 ND	2 ND	**8.21**	4 ND	**7.36**	4 ND	4 ND	2 ND	20 ND	4 ND	4 ND	4 ND	4 ND	**8.9**	2 ND	4 ND	2 ND	4.06	2 ND	4.3	**48.1**	2 ND
2,4-Dichlorophenol	ug/L	19	4 ND	4 ND	4 ND	2 ND	2 ND	2.13	4.69	4 ND	4 ND	4 ND	2 ND	8 ND	4 ND	4 ND	**40.7**	4 ND	8.72	2 ND	9.24	2 ND	3.98	2 ND	6.61	**34.6**	2 ND
2,4-Dimethylphenol	ug/L	380	184	243	35.9	2 ND	2 ND	2 ND	11.2	4 ND	4 ND	6.64	3.68	71.6	4 ND	4 ND	14.2	4 ND	4 ND	2 ND	4 ND	2 ND	2 ND	2 ND	2 ND	39	2 ND
2-Chlorophenol	ug/L	22	4 ND	4 ND	4 ND	2 ND	2 ND	2 ND	4 ND	4 ND	4 ND	4 ND	2 ND	9 ND	4 ND	4 ND	4 ND	4 ND	4 ND	2 ND	4 ND	2 ND	2 ND	2 ND	2 ND	17.4	2 ND
Acenaphthene	ug/L	19	4 ND	4 ND	4 ND	2 ND	2 ND	2 ND	4 ND	4 ND	4 ND	4 ND	2 ND	5 ND	4 ND	4 ND	4 ND	4 ND	4 ND	2 ND	4 ND	2 ND	6.07	2 ND	7.87	5.45	2 ND
Aniline	ug/L	20	**35.9**	**33.4**	7.02	2 ND	2 ND	2 ND	4 ND	4 ND	4 ND	4 ND	2 ND	4 ND	4 ND	4 ND	4	4 ND	4 ND	2 ND	4 ND	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND
bis(2-Ethylhexyl)phthalate	ug/L	32	**189**	**164**	4.74	2 ND	2 ND	**124**	**54**	4 ND	**287**	4 ND	2 ND	**113**	**46.3**	7.73	4 ND	4 ND	4 ND	2 ND	4 ND	2 ND	2 ND	2 ND	2 ND	29.2	2 ND
Carbazole	ug/L	10	**27.7**	**31.1**	5.04	2 ND	2 ND	2 ND	5.43	4 ND	4 ND	4 ND	2 ND	**24.8**	4 ND	4.87	4 ND	4 ND	4 ND	2 ND	4 ND	2 ND	5.68	2 ND	9.55	**39.1**	2 ND
Dibenzofuran	ug/L	4	**14.5**	**22.7**	4 ND	2 ND	2 ND	2 ND	4 ND	4 ND	4 ND	4 ND	2 ND	**23.1**	4 ND	4 ND	4 ND	4 ND	4 ND	2 ND	4 ND	2 ND	**4.32**	2 ND	**6.1**	**24.1**	2 ND
Fluoranthene	ug/L	1.6	**39.1**	**59.3**	**8.67**	2 ND*	2 ND*	**7**	**4.96**	4 ND*	4 ND*	4 ND*	2 ND*	**47.9**	**7.23**	**4.5**	4 ND*	4 ND*	4 ND*	2 ND*	4 ND*	2 ND*	**3.61**	2 ND*	**5.11**	**41.6**	2 ND*
Fluorene	ug/L	12	**15.8**	**22**	4 ND	2 ND	2 ND	2.09	4.27	4 ND	4 ND	4 ND	2 ND	**23.3**	4 ND	4 ND	4 ND	4 ND	4 ND	2 ND	4 ND	2 ND	4.14	2 ND	6.72	**33.1**	2 ND
Hexachlorobutadiene	ug/L	0.053	4 ND*	4 ND*	4 ND*	2 ND*	3 ND*	2 ND*	4 ND*	4 ND*	4 ND*	4 ND*	2 ND*	10 ND*	5 ND*	4 ND*	4 ND*	4 ND*	4 ND*	2 ND*	4 ND*	2 ND*	2 ND*	2 ND*	2 ND*	2 ND*	2 ND*
m,p-Cresol	ug/L	71	**777**	**854**	**158**	6 ND	6 ND	6 ND	**584**	**87.9**	10 ND	28.3	6 ND	**434**	10 ND	67.3	10 ND	10 ND	10 ND	6 ND	10 ND	6 ND	38.5	6 ND	66.1	**339**	6 ND
Naphthalene	ug/L	13	**194**	**223**	**25**	2 ND	2 ND	2 ND	**89**	4 ND	4 ND	**57.7**	**16.9**	**286**	5.48	**48.4**	4 ND	4 ND	4 ND	2 ND	4 ND	2 ND	**43.9**	2 ND	**61.3**	**224**	2 ND
o-Cresol	ug/L	71	**233**	**267**	49.2	2 ND	2 ND	2 ND	35.1	5.8	4 ND	8.26	6.33	**122**	4 ND	14.1	8.8	4 ND	4 ND	2 ND	4 ND	2 ND	6.79	2 ND	15.7	**78.6**	2 ND
Pentachlorophenol	ug/L	1.8	**147**	**129**	**35.1**	4 ND*	4 ND*	**7.75**	8 ND*	**19.5**	8 ND*	**71.3**	**16.1**	**381**	8 ND*	**82.3**	8 ND*	8 ND*	**8.4**	4 ND*	8 ND*	4 ND*	**34.8**	4 ND*	**52.3**	**60.6**	4 ND*
Phenanthrene	ug/L	5	**60.3**	**93.1**	**11.8**	2 ND	2 ND	**5.67**	**13.2**	4.13	4 ND	4 ND	2.47	**70.8**	**7.27**	**8.73**	4 ND	4 ND	4 ND	2 ND	4 ND	2 ND	**9.26**	2 ND	**14**	**87.4**	2 ND
Phenol	ug/L	210	**731**	**770**	147	2 ND	2 ND	2 ND	69.4	166	4 ND	55.1	11.6	**347**	4 ND	54.5	4 ND	4 ND	11	2 ND	4 ND	2 ND	25.8	2 ND	37.5	**267**	2 ND

PCBs	SAMPLE #	GSI Criteria+	MW-D	MW-D0	MW-E	MW-G	MW-H	MW-I	MW-J	MW-K	PZ-1	PZ-2	PZ-3	PZ-4	PZ-5	PZ-6	SB-01	SB-02	SB-03	SMW-01	SMW-02	SMW-03	SMW-04	SMW-04-99	SMW-040	SMW-05	SMW-05-99
			J011012	J011013	J011017	J011007	J030020	J030021	J042003	J030015	J030006	J030011	J030012	J030002	J030008	J030001	J011011	J011009	J011015	J030018	J011010	J030010	J053017	J011003	J053016	J042002	J011004
			8/8/00	8/8/00	8/9/00	8/7/00	8/15/00	8/15/00	8/16/00	8/14/00	8/10/00	8/11/00	8/11/00	8/10/00	8/11/00	8/10/00	8/8/00	8/8/00	8/9/00	8/15/00	8/8/00	8/14/00	8/23/00	8/4/00	8/23/00	8/16/00	8/7/00
Arochlor-1242	ug/L		0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
Arochlor-1248	ug/L		0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.646	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	2.58	0.2 ND
Arochlor-1254	ug/L		6.04	4.51	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	6.55	0.391	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
Arochlor-1260	ug/L		0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
Total PCBs	ug/L	0.2	**6.04**	**4.51**	ND	ND	ND	**0.646**	ND	ND	ND	ND	ND	**6.55**	**0.391**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**2.58**	ND

METALS	SAMPLE #	GSI Criteria+	MW-D	MW-D0	MW-E	MW-G	MW-H	MW-I	MW-J	MW-K	PZ-1	PZ-2	PZ-3	PZ-4	PZ-5	PZ-6	SB-01	SB-02	SB-03	SMW-01	SMW-02	SMW-03	SMW-04	SMW-04-99	SMW-040	SMW-05	SMW-05-99
			J011012	J011013	J011017	J011007	J030020	J030021	J042003	J030015	J030006	J030011	J030012	J030002	J030003	J030001	J011011	J011009	J011015	J030018	J011010	J030010	J053017	J011003	J053016	J042002	J011004
			8/8/00	8/8/00	8/9/00	8/7/00	8/15/00	8/15/00	8/16/00	8/14/00	8/10/00	8/11/00	8/11/00	8/10/00	8/10/00	8/10/00	8/8/00	8/8/00	8/9/00	8/15/00	8/8/00	8/14/00	8/23/00	8/4/00	8/23/00	8/16/00	8/7/00
Arsenic	mg/L	0.05	**14.3**	**13.7**	**2.22**	0.004 ND	**0.168**	**0.869**	**0.127**	**0.201**	**0.122**	**0.159**	0.035	**0.262**	**0.308**	**0.065**	**0.622**	0.011	**0.216**	**0.055**	**0.201**	0.004 ND	**0.095**	0.004 ND	**0.101**	**0.526**	0.004 ND
Barium	mg/L	0.48	0.021	0.019	0.021	0.05	0.167	0.039	0.258	0.167	0.396	0.062	0.021	0.038	0.368	0.024	0.375	0.075	0.096	0.135	0.281	0.07	0.107	0.032	0.1	0.019	0.053
Cadmium	mg/L	0.0025	0.002 ND	0.002 ND	0.0014	0.0005 ND	0.001 ND	0.0009	0.002 ND	0.002 ND	0.0005 ND	0.0005 ND	0.0005 ND	0.0025 ND	0.0005 ND	0.0005 ND	0.002 ND	0.0005 ND	0.002	0.0005 ND	0.001 ND	0.0005 ND	0.001 ND	0.0022	0.0005 ND	0.0005 ND	0.0005 ND
Chromium	mg/L	0.08	**0.129**	**0.123**	0.068	0.011	**0.286**	0.046	**0.286**	**0.663**	**0.164**	0.092	0.017	**0.142**	**0.428**	0.05	**0.463**	0.017	**3.43**	0.071	**0.566**	0.004 ND	0.071	0.004 ND	0.072	0.079	0.006
Copper	mg/L	0.097	0.013	0.012	0.079	0.011	0.029	0.044	0.029	0.019	0.013	0.006	0.022	0.015	0.06	0.032	0.032	0.023	**0.298**	0.018	0.032	0.008	0.008	0.009	0.006	0.018	0.008
Lead	mg/L	0.011	**0.011**	**0.011**	**0.798**	0.004	0.004 ND	**0.012**	**0.069**	0.008 ND	0.006	0.005	**0.022**	**0.039**	0.005	**0.113**	0.01	**0.021**	**0.054**	0.006	**0.012**	0.004 ND	0.006	0.004	0.005	**0.016**	0.002 ND
Mercury	mg/L	0.0000013	**0.919**	**0.716**	**0.341**	**0.0003**	**0.0012**	**0.0008**	**0.113**	**0.0387**	**0.0016**	**0.0147**	**0.0034**	**0.372**	**0.0033**	**0.0181**	**0.0008**	**0.0003**	**0.0296**	**0.0003**	**0.0009**	0.0002 ND*	**0.0009**	0.0002 ND*	**0.0006**	**0.0189**	0.0002 ND*
Selenium	mg/L	0.005	**0.01**	**0.009**	0.004	0.004 ND	**0.022**	0.004 ND	0.008 ND*	**0.018**	**0.009**	0.004	0.004 ND	**0.01**	**0.03**	0.004 ND	**0.019**	0.004 ND	**0.034**	0.004 ND	**0.011**	0.004 ND	0.004 ND	0.008 ND*	0.004 ND	0.004	0.004 ND
Zinc	mg/L	0.13	0.02 ND	0.02 ND	**0.224**	0.035	0.027	0.051	0.045	0.041	0.027	0.014	0.01 ND	0.033	0.062	0.065	0.125	0.022	**0.145**	0.02	0.042	0.014	0.03	0.099	0.028	0.049	0.01 ND

INORGANICS	SAMPLE #	GSI Criteria+	MW-D	MW-D0	MW-E	MW-G	MW-H	MW-I	MW-J	MW-K	PZ-1	PZ-2	PZ-3	PZ-4	PZ-5	PZ-6	SB-01	SB-02	SB-03	SMW-01	SMW-02	SMW-03	SMW-04	SMW-04-99	SMW-040	SMW-05	SMW-05-99
			J011012	J011013	J011017	J011007	J030020	J030021	J042003	J030015	J030006	J030011	J030012	J030002	J030008	J030001	J011011	J011009	J011015	J030018	J011010	J030010	J053017	J011003	J053016	J042002	J011004
			8/8/00	8/8/00	8/9/00	8/7/00	8/15/00	8/15/00	8/16/00	8/14/00	8/10/00	8/11/00	8/11/00	8/10/00	8/11/00	8/10/00	8/8/00	8/8/00	8/9/00	8/15/00	8/8/00	8/14/00	8/23/00	8/4/00	8/23/00	8/16/00	8/7/00
Chloride	mg/L	50	**613**	**622**	**235**	**466**	**1420**	**539**	**528**	**1340**	**3590**	**1050**	**316**	**1420**	**3260**	**742**	**590**	**331**	**1580**	**206**	**664**	**80.5**	**561**	**138**	**590**	**564**	**127**
Cyanide, Total	mg/L	0.02	**9.56**	**9.47**	**1.49**	**0.185**	**2.81**	**0.51**	**2.78**	**24.8**	**2.1**	**1.33**	**0.53**	**2.42**	**10.3**	**1.18**	**4.75**	**0.098**	**2.48**	**0.45**	**0.79**	**0.035**	**0.936**	0.006	**0.943**	**2.07**	**0.131**
Nitrogen, Ammonia	mg/L	0.029	**28.6**	**28.8**	**6.95**	**5.06**	**9.18**	**5.61**	**32**	**58.2**	**4.55**	**10.9**	**1.69**	**15.8**	**13.6**	**2.71**	**42.1**	**8.12**	**46.1**	**1.94**	**24.4**	**0.58**	**10.8**	**3.98**	**10.5**	**7.34**	**0.31**

Bold results indicate GSI Criterion exceedance.
N/A - Not analyzed
* Indicates laboratory non-detect with MDL greater than GSI criterion.
+ Source - Operational Memorandum No. 18 or MDEQ Background Value.
ND - Non-Detect (Not reported above laoratory detection limits).

Table 11
BASF Riverview, Michigan
Groundwater Samples
GSI Criteria Comparison
Printed: 1/31/0

URS

VOLATILE ORGANICS (SAMPLE #)		GSI Criteria+	SMW-06 J042007 8/17/00	SMW-06-99 J011005 8/7/00	SMW-07 J011002 8/4/00	SMW-08 J011001 8/4/00	SMW-09 J042009 8/18/00	SMW-10 J042006 8/17/00	SMW-11 J053004 8/22/00	SMW-12 J042021 8/21/00	SMW-13 J053018 8/23/00	SMW-14 J042019 8/21/00	SMW-15 J042020 8/21/00
1,2-Dichlorobenzene	ug/L	16	3 ND	2 ND	1 ND	1 ND	4 ND	**28**	2 ND	2 ND	20 ND*	1 ND	1 ND
1,2-Dichloroethane	ug/L	6	**25**	3 ND	1 ND	1 ND	5 ND	**35**	3 ND	3 ND	40 ND*	**6**	1 ND
1,2-Dichloropropane	ug/L	9.1	**14**	2 ND	1 ND	1 ND	**10**	**34**	2 ND	2 ND	20 ND*	**16**	1 ND
Acetone	ug/L	1700	**2200**	20 ND	20 ND	87	660	**2300**	890	940	300 ND	160	9 ND
Benzene	ug/L	12	3.8	1 ND	1 ND	1.2	**140**	**53**	2.8	1 ND	7 ND	**17**	1 ND
Chlorobenzene	ug/L	47	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	8 ND	1 ND	1 ND
Ethylbenzene	ug/L	18	2 ND	2 ND	1 ND	1 ND	2 ND	2 ND	1 ND	2 ND	20 ND*	1 ND	1 ND
m,p-Xylene	ug/L	35	1 ND	1 ND	1 ND	1 ND	5.9	21	1 ND	1 ND	9 ND	2.4	1 ND
Methylene chloride	ug/L	47	**62**	5 ND	5 ND	5 ND	5 ND	**350**	45	**52**	20 ND	14	5 ND
o-Xylene	ug/L	35	1 ND	1 ND	1 ND	1 ND	8	11	1 ND	1 ND	10 ND	1.2	1 ND
Styrene	ug/L	80	1 ND	1 ND	1 ND	1 ND	1 ND	5.8	1 ND	1 ND	8 ND	1 ND	1 ND
Tetrachloroethene	ug/L	11	3 ND	2 ND	1 ND	1 ND	3 ND	6.5	2 ND	2 ND	20 ND	1 ND	1 ND
Toluene	ug/L	140	3.2	1 ND	1 ND	1 ND	56	110	3.3	1 ND	18	5.3	1 ND
Trichloroethene	ug/L	29	2 ND	2 ND	1 ND	1 ND	6.7	2 ND	2 ND	2 ND	20 ND	1 ND	1 ND
Vinyl chloride	ug/L	15	5.2	2 ND	2 ND	2 ND	2.8	**66**	2 ND	2 ND	10 ND	2 ND	2 ND
Xylenes, total	ug/L	35	1 ND	1 ND	1 ND	1 ND	8	21	1 ND	1 ND	9 ND	3.6	1 ND

VOLATILE ORGANICS (SAMPLE #)		GSI Criteria+	SMW-16 J053009 8/22/00	SMW-17 J053008 8/22/00	SMW-18 J042013 8/21/00	SMW-19 J042014 8/21/00	SMW-190 J042015 8/21/00	SMW-20 J042016 8/21/00	SMW-21 J042017 8/21/00	SMW-22 J042018 8/21/00	SMW-23 J053005 8/22/00	SMW-230 J053006 8/22/00	SMW-24 J053014 8/23/00	SMW-25 J053015 8/23/00	SMW-26 J053011 8/23/00	SMW-260 J053012 8/23/00	SMW-27 J053013 8/23/00
1,2-Dichlorobenzene	ug/L	16	1 ND	1 ND	1 ND	1 ND	1 ND	30 ND*	1 ND	3 ND	1 ND	1 ND	1.7	1 ND	1 ND	1 ND	5.1
1,2-Dichloroethane	ug/L	6	1 ND	1 ND	1 ND	1 ND	1 ND	**320**	1 ND	4 ND	1 ND	1 ND	**13**	2 ND	**27**	**36**	**55**
1,2-Dichloropropane	ug/L	9.1	1 ND	1 ND	1 ND	1 ND	1 ND	20 ND*	1 ND	5.5	1 ND	1 ND	2.2	1 ND	**17**	**22**	**11**
Acetone	ug/L	1700	10 ND	9 ND	5 ND	5 ND	8 ND	200 ND	6 ND	**4000**	10 ND	20 ND	20 ND	20 ND	220	2000 ND*	1300
Benzene	ug/L	12	1 ND	1.3	1 ND	1 ND	1 ND	**2500**	1 ND	3.3	1 ND	1 ND	**23**	**34**	**20**	**27**	**38**
Chlorobenzene	ug/L	47	1 ND	1 ND	1 ND	1 ND	1 ND	**430**	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND
Ethylbenzene	ug/L	18	1 ND	1.1	1 ND	1 ND	1 ND	**190**	1 ND	2 ND	1 ND	1 ND	2	6.1	7.4	**33**	3 ND
m,p-Xylene	ug/L	35	1 ND	2.5	1 ND	1 ND	1 ND	**500**	1 ND	1 ND	1 ND	1 ND	2	11	17	32	13
Methylene chloride	ug/L	47	5 ND	11	5 ND	5 ND	5 ND	**1800**	5 ND	5 ND	32	29	5 ND	5 ND	**130**	**140**	**460**
o-Xylene	ug/L	35	1 ND	1.5	1 ND	1 ND	1 ND	**300**	1 ND	1 ND	1 ND	1 ND	1.8	7.8	11	27	18
Styrene	ug/L	80	1 ND	1 ND	1 ND	1 ND	1 ND	**250**	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	2.1	1 ND	1 ND
Tetrachloroethene	ug/L	11	1 ND	1 ND	1 ND	1 ND	1 ND	20 ND	1 ND	2 ND	1 ND	1 ND	1 ND	1 ND	1.8	1 ND	2 ND
Toluene	ug/L	140	1 ND	1.2	1 ND	1 ND	1 ND	**1500**	1 ND	4.7	1 ND	1 ND	4.1	8.1	31	46	58
Trichloroethene	ug/L	29	1 ND	1 ND	1 ND	1 ND	1 ND	20 ND	1 ND	2 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	**65**
Vinyl chloride	ug/L	15	2 ND	2 ND	2 ND	2 ND	2 ND	10 ND	2 ND	2 ND	2 ND	2 ND	2 ND	3.8	6.1	9.6	**17**
Xylenes, total	ug/L	35	1 ND	4	1 ND	1 ND	1 ND	**800**	1 ND	1 ND	1 ND	1 ND	3.8	18.8	28	**59**	31

SEMIVOLATILE ORGANICS (SAMPLE #)		GSI Criteria+	SMW-06 J042007 8/17/00	SMW-06-99 J011005 8/7/00	SMW-07 J011002 8/4/00	SMW-08 J011006 8/7/00	SMW-09 J042009 8/18/00	SMW-10 J042006 8/17/00	SMW-11 J053004 8/22/00	SMW-12 J042021 8/21/00	SMW-13 J053018 8/23/00	SMW-14 J042019 8/21/00	SMW-15 J042020 8/21/00
1,2,4,5-Tetrachlorobenzene	ug/L	2.8	4 ND*	2 ND*	2 ND*	2 ND*	2 ND*	4 ND*	2 ND*	4 ND*	4 ND*	3	2 ND*
2,4,6-Trichlorophenol	ug/L	4.4	4.16	2 ND	2 ND	2 ND	**27.2**	4.19	**6.53**	**6.38**	**7.64**	3 ND	2 ND
2,4-Dichlorophenol	ug/L	19	4 ND	2 ND	2 ND	2 ND	7.51	4 ND	2 ND	4 ND	5.96	2 ND	2.79
2,4-Dimethylphenol	ug/L	380	203	2 ND	2 ND	2 ND	2 ND	181	42.6	4 ND	4 ND	2 ND	2 ND
2-Chlorophenol	ug/L	22	4 ND	2 ND	2 ND	2 ND	2 ND	4 ND	2 ND	4 ND	4 ND	4 ND	2 ND
Acenaphthene	ug/L	19	4.71	2 ND	2 ND	2 ND	2 ND	11.1	2 ND	4 ND	4.15	2 ND	2 ND
Aniline	ug/L	20	4 ND	2 ND	2 ND	2 ND	2 ND	24.8	2 ND	4 ND	4 ND	2 ND	2 ND
bis(2-Ethylhexyl)phthalate	ug/L	32	**355**	2 ND	2 ND	2 ND	2 ND	**266**	2 ND	**162**	16.6	11.4	**280**
Carbazole	ug/L	10	**26.9**	2 ND	2 ND	2 ND	2 ND	**87.1**	2 ND	6.38	**29.4**	2 ND	2 ND
Dibenzofuran	ug/L	4	**13**	2 ND	2 ND	2 ND	2 ND	**58**	2 ND	4 ND	**28.4**	**4.32**	2 ND
Fluoranthene	ug/L	1.6	**61.9**	2 ND*	2 ND*	2 ND*	2 ND*	**96**	**6.63**	4 ND*	**35.6**	**17.1**	2 ND*
Fluorene	ug/L	12	**20.7**	2 ND	2 ND	2 ND	2 ND	**60.5**	2 ND	4 ND	**32.7**	5.06	2 ND
Hexachlorobutadiene	ug/L	0.053	4 ND*	2 ND*	2 ND*	2 ND*	2 ND*	4 ND*	2 ND*	4 ND*	4 ND*	3 ND*	2 ND*
m,p-Cresol	ug/L	71	**658**	6 ND	6 ND	6 ND	22.5	**699**	**119**	46.7	**131**	6 ND	6 ND
Naphthalene	ug/L	13	**98.8**	2 ND	2 ND	2 ND	9.81	**911**	3.25	4 ND	**490**	**29.9**	2 ND
o-Cresol	ug/L	71	**192**	2 ND	2 ND	2 ND	2 ND	**197**	25.6	4 ND	17.4	3 ND	2 ND
Pentachlorophenol	ug/L	1.8	**104**	4 ND*	4 ND*	4 ND*	4 ND*	8 ND*	**41.9**	**79.7**	**61.5**	5 ND	4 ND*
Phenanthrene	ug/L	5	**75.9**	2 ND	2 ND	2 ND	2 ND	**211**	**6.32**	4 ND	**75.5**	**19.3**	2 ND
Phenol	ug/L	210	**595**	2 ND	2 ND	2 ND	14.5	**820**	**317**	189	166	6.25	2 ND

SEMIVOLATILE ORGANICS (SAMPLE #)		GSI Criteria+	SMW-16 J053009 8/22/00	SMW-17 J053008 8/22/00	SMW-18 J042013 8/21/00	SMW-19 J042014 8/21/00	SMW-190 J042015 8/21/00	SMW-20 J042016 8/21/00	SMW-21 J042017 8/21/00	SMW-22 J042018 8/21/00	SMW-23 J053005 8/22/00	SMW-230 J053006 8/22/00	SMW-24 J053014 8/23/00	SMW-25 J053015 8/23/00	SMW-26 J053011 8/23/00	SMW-260 J053012 8/23/00	SMW-27 J053013 8/23/00
1,2,4,5-Tetrachlorobenzene	ug/L	2.8	2 ND*	2 ND*	2 ND*	2 ND*	2 ND*	6 ND*	4 ND*	4 ND*	2 ND*	2 ND*	2 ND*	2 ND*	2 ND*	2 ND*	2 ND*
2,4,6-Trichlorophenol	ug/L	4.4	2 ND	2 ND	2 ND	2 ND	2 ND	**14.7**	4 ND	4 ND	2 ND	2 ND	2 ND	**9.83**	3.89	2.97	2.52
2,4-Dichlorophenol	ug/L	19	2 ND	2 ND	2 ND	2 ND	2 ND	**49.2**	4 ND	4 ND	2 ND	2 ND	2 ND	8.54	5.61	6.11	4.24
2,4-Dimethylphenol	ug/L	380	2 ND	2 ND	2 ND	2 ND	2 ND	**580**	4 ND	4 ND	2 ND	2 ND	2 ND	2 ND	2 ND	3.19	**832**
2-Chlorophenol	ug/L	22	2 ND	2 ND	2 ND	2 ND	2 ND	**43.7**	4 ND	4 ND	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND
Acenaphthene	ug/L	19	2 ND	2 ND	2 ND	2 ND	2 ND	**110**	4 ND	4 ND	2 ND	2 ND	2 ND	2 ND	2.16	2.41	2 ND
Aniline	ug/L	20	2 ND	2 ND	2 ND	2 ND	2 ND	4 ND	4 ND	4 ND	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	4.31
bis(2-Ethylhexyl)phthalate	ug/L	32	2 ND	2 ND	5.1	2 ND	2 ND	**2510**	4 ND	**326**	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	5.62
Carbazole	ug/L	10	2 ND	2 ND	2 ND	2 ND	2 ND	**1110**	4 ND	4 ND	2 ND	2 ND	2 ND	2 ND	**10.3**	**11.6**	**19.7**
Dibenzofuran	ug/L	4	2 ND	2 ND	2 ND	2 ND	2 ND	**1080**	4 ND	4 ND	2 ND	2 ND	2 ND	2 ND	**7.33**	**7.3**	**10.3**
Fluoranthene	ug/L	1.6	2 ND*	2 ND*	2 ND*	2 ND*	2 ND*	**3390**	4 ND*	4 ND*	2 ND*	2 ND*	2 ND*	2 ND*	**2.87**	**3.22**	**9.6**
Fluorene	ug/L	12	2 ND	2 ND	2 ND	2 ND	2 ND	**1250**	4 ND	4 ND	2 ND	2 ND	2 ND	2 ND	8.19	8.44	11.6
Hexachlorobutadiene	ug/L	0.053	2 ND*	2 ND*	2 ND*	2 ND*	2 ND*	6 ND*	4 ND*	4 ND*	2 ND*	2 ND*	2 ND*	2 ND*	2 ND*	2 ND*	2 ND*
m,p-Cresol	ug/L	71	6 ND	6 ND	6 ND	6 ND	6 ND	**3900**	10 ND	46.2	6 ND	6 ND	6 ND	6 ND	26.9	62.5	**428**
Naphthalene	ug/L	13	2 ND	2.42	2 ND	2 ND	2 ND	**5340**	4 ND	8.14	2 ND	2 ND	5.39	**13.3**	208	**247**	**236**
o-Cresol	ug/L	71	2 ND	2 ND	2 ND	2 ND	2 ND	**1210**	4 ND	4 ND	2 ND	2 ND	2 ND	2 ND	2 ND	6.99	**85.2**
Pentachlorophenol	ug/L	1.8	4 ND*	4 ND*	4 ND*	4 ND*	4 ND*	**254**	8 ND*	8 ND*	4 ND*	4 ND*	4 ND*	4 ND*	**55.9**	**69.6**	**32**
Phenanthrene	ug/L	5	2 ND	2 ND	2 ND	2 ND	2 ND	**4820**	4 ND	4 ND	2 ND	2 ND	2 ND	2 ND	**11.7**	**12.9**	**19.8**
Phenol	ug/L	210	2 ND	2 ND	194	2 ND	2 ND	**2310**	4 ND	39.1	2 ND	2 ND	2 ND	2 ND	28.4	39.4	**328**

PCBs (SAMPLE #)		GSI Criteria+	SMW-06 J042007 8/17/00	SMW-06-99 J011005 8/7/00	SMW-07 J011002 8/4/00	SMW-08 J011001 8/4/00	SMW-09 J042009 8/18/00	SMW-10 J042006 8/17/00	SMW-11 J053004 8/22/00	SMW-12 J042021 8/21/00	SMW-13 J053018 8/23/00	SMW-14 J042019 8/21/00	
Arochlor-1242	ug/L		0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	N/A
Arochlor-1248	ug/L		0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	
Arochlor-1254	ug/L		11	0.2 ND	0.2 ND	0.2 ND	0.2 ND	53.5	0.2 ND	0.2 ND	0.2 ND	0.2 ND	
Arochlor-1260	ug/L		0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	
Total PCBs	ug/L	0.2	**11**	ND	ND	ND	ND	**53.5**	ND	ND	ND	ND	

PCBs (SAMPLE #)		GSI Criteria+	SMW-16 J053009 8/22/00	SMW-17 J053008 8/22/00	SMW-18 J042013 8/21/00	SMW-19 J042014 8/21/00	SMW-190 J042015 8/21/00	SMW-20 J042016 8/21/00	SMW-21 J042017 8/21/00	SMW-22 J042018 8/21/00	SMW-23 J053005 8/22/00	SMW-230 J053006 8/22/00	SMW-24 J053014 8/23/00	SMW-25 J053015 8/23/00	SMW-26 J053011 8/23/00	SMW-260 J053012 8/23/00	SMW-27 J053013 8/23/00
Arochlor-1242	ug/L		0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
Arochlor-1248	ug/L		0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
Arochlor-1254	ug/L		0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	59.4	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
Arochlor-1260	ug/L		0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
Total PCBs	ug/L	0.2	ND	ND	ND	ND	ND	**59.4**	ND	ND	ND	ND	ND	ND	ND	ND	ND

METALS (SAMPLE #)		GSI Criteria+	SMW-06 J042007 8/17/00	SMW-06-99 J011005 8/7/00	SMW-07 J011002 8/4/00	SMW-08 J011001 8/4/00	SMW-09 J042009 8/18/00	SMW-10 J042006 8/17/00	SMW-11 J053004 8/22/00	SMW-12 J042021 8/21/00	SMW-13 J053018 8/23/00	SMW-14 J042019 8/21/00	SMW-15 J042020 8/21/00
Arsenic	mg/L	0.05	**15.3**	**0.106**	0.004 ND	0.004 ND	**0.053**	**11.4**	**6.61**	0.753	**0.341**	0.019	0.044
Barium	mg/L	0.48	0.016	0.121	0.071	0.054	0.028	0.153	0.228	0.132	0.065	0.096	0.068
Cadmium	mg/L	0.0025	0.002 ND	0.0005 ND	0.001 ND	0.0005 ND	0.0005 ND	0.002	0.001 ND	0.002 ND	0.001 ND	0.001 ND	0.0005 ND
Chromium	mg/L	0.08	**0.178**	0.044	0.004 ND	0.004 ND	0.026	**0.299**	**0.97**	**0.586**	**0.202**	0.009	0.006
Copper	mg/L	0.097	0.013	0.017	0.01	0.008	0.018	0.021	0.039	**0.087**	0.048	0.004	0.06
Lead	mg/L	0.011	0.01	0.003	0.003	0.002 ND	**0.042**	**0.077**	**0.014**	**0.105**	**0.054**	0.004 ND	0.002
Mercury	mg/L	0.0000013	**0.423**	**0.0005**	0.0002 ND*	0.0002 ND*	**0.0174**	**0.291**	**0.037**	**0.0269**	**0.259**	**0.001**	**0.0003**
Selenium	mg/L	0.005	**0.013**	**0.005**	0.004 ND	0.004 ND	0.004 ND	**0.015**	**0.029**	**0.037**	**0.011**	0.004 ND	**0.006**
Zinc	mg/L	0.13	0.028	0.018	0.031	0.033	0.022	0.062	0.097	0.057	0.096	0.01 ND	0.021

METALS (SAMPLE #)		GSI Criteria+	SMW-16 J053009 8/22/00	SMW-17 J053008 8/22/00	SMW-18 J042013 8/21/00	SMW-19 J042014 8/21/00	SMW-190 J042015 8/21/00	SMW-20 J042016 8/21/00	SMW-21 J042017 8/21/00	SMW-22 J042018 8/21/00	SMW-23 J053005 8/22/00	SMW-230 J053006 8/22/00	SMW-24 J053014 8/23/00	SMW-25 J053015 8/23/00	SMW-26 J053011 8/23/00	SMW-260 J053012 8/23/00	SMW-27 J053013 8/23/00
Arsenic	mg/L	0.05	0.004 ND	0.005	0.008	0.005	0.004 ND	**0.734**	0.006	**0.301**	**0.089**	**0.1**	**0.063**	0.023	**0.186**	**0.189**	**20.2**
Barium	mg/L	0.48	0.044	**1.05**	0.07	**0.485**	0.47	0.033	0.049	0.428	0.087	0.091	0.022	0.011	0.014	0.015	0.034
Cadmium	mg/L	0.0025	0.0005 ND	0.0005 ND	0.0005 ND	0.0005 ND	0.0005 ND	0.001 ND	0.0005 ND	0.001 ND	0.0005 ND	0.0005 ND	0.0005 ND	0.0005 ND	**0.0032**	**0.0035**	**0.0054**
Chromium	mg/L	0.08	0.033	0.004 ND	0.004 ND	0.004 ND	0.004 ND	**0.496**	0.004 ND	**0.89**	0.04	0.03	0.024	0.019	0.021	0.021	**0.254**
Copper	mg/L	0.097	0.004 ND	0.004 ND	0.004 ND	0.004 ND	0.004 ND	0.028	0.013	0.048	0.019	0.013	0.004 ND	0.004	0.036	0.038	0.039
Lead	mg/L	0.011	0.002 ND	0.007	0.005	0.006	0.003	**0.035**	0.004	**0.097**	0.004	0.002	0.002 ND	0.005	**0.142**	**0.158**	**0.121**
Mercury	mg/L	0.0000013	0.0002 ND*	0.0002 ND*	0.0002 ND*	0.0002 ND*	0.0002 ND*	**1.71**	**0.0008**	**0.0269**	0.0002 ND*	0.0002 ND*	**0.0009**	**0.0008**	**0.0235**	**0.0218**	**0.739**
Selenium	mg/L	0.005	0.004 ND	0.004 ND	0.004 ND	0.004 ND	0.004 ND	**0.022**	0.004 ND	**0.027**	0.004 ND	0.004 ND	0.004 ND	0.004 ND	0.004 ND	0.004 ND	**0.011**
Zinc	mg/L	0.13	0.01 ND	0.01 ND	0.01 ND	0.012	0.01 ND	0.094	0.01 ND	0.101	0.029	0.01 ND	0.01 ND	0.015	**0.154**	**0.16**	**0.299**

INORGANICS (SAMPLE #)		GSI Criteria+	SMW-06 J042007 8/17/00	SMW-06-99 J011005 8/7/00	SMW-07 J011002 8/4/00	SMW-08 J011006 8/7/00	SMW-09 J042009 8/18/00	SMW-10 J042006 8/17/00	SMW-11 J053004 8/22/00	SMW-12 J042021 8/21/00	SMW-13 J053018 8/23/00	SMW-14 J042019 8/21/00	
Chloride	mg/L	50	**808**	**1710**	**121**	**74**	**434**	**1010**	**1030**	**1250**	**531**	**81.1**	N/A
Cyanide, Total	mg/L	0.02	**9.72**	**0.582**	0.006	0.005 ND	**0.9**	**15.1**	**12.4**	**16**	**2.72**	**0.062**	
Nitrogen, Ammonia	mg/L	0.029	**33.8**	**17.6**	**0.76**	**1.52**	**2.37**	**37.5**	**50**	**37.8**	**39.7**	**0.89**	

INORGANICS (SAMPLE #)		GSI Criteria+	SMW-16 J053009 8/22/00	SMW-17 J053008 8/22/00	SMW-18 J042013 8/21/00	SMW-19 J042014 8/21/00	SMW-190 J042015 8/21/00	SMW-20 J042016 8/21/00	SMW-21 J042017 8/21/00	SMW-22 J042018 8/21/00	SMW-23 J053005 8/22/00	SMW-230 J053006 8/22/00	SMW-24 J053014 8/23/00	SMW-25 J053015 8/23/00	SMW-26 J053011 8/23/00	SMW-260 J053012 8/23/00	SMW-27 J053013 8/23/00
Chloride	mg/L	50	**72.6**	11.2	**298**	**63.4**	**61.4**	**1410**	**109**	**1500**	**222**	**202**	**218**	**233**	**261**	**247**	**335**
Cyanide, Total	mg/L	0.02	0.005 ND	**0.48**	0.006	0.009	**0.027**	**3.36**	0.013	**6.44**	**0.087**	**0.09**	**0.686**	**0.337**	**0.451**	**0.436**	**1.91**
Nitrogen, Ammonia	mg/L	0.029	**0.38**	**6.05**	**9.47**	**3.94**	**3.96**	**23.4**	**0.48**	**78.2**	**8.29**	**8.31**	**4.23**	**1.53**	**4.67**	**4.63**	**17.6**

Bold results indicate GSI Criterion exceedance.
N/A - Not analyzed
* Indicates laboratory non-detect with MDL greater than GSI criterion.
+ Source - Operational Memorandum No. 18 or MDEQ Background Value.
ND - Non-Detect (Not reported above laoratory detection limits).

Table 12
BASF Riverview, Michigan
Groundwater Samples
Relative Potency of Dioxins
Printed: 1-24-01
Source: Pace Laboratory

			SMW-5			SMW-6			SMW-13		
Congener	TEF 1997	TEF 1989	Conc. (ng/L)	Toxic Equiv. ('97)	Toxic Equiv. ('89)	Conc. (ng/L)	Toxic Equiv. ('97)	Toxic Equiv. ('89)	Conc. (ng/L)	Toxic Equiv. ('97)	Toxic Equiv. ('89)
2378-TCDD	1	1	0.0078	0.008	0.008	0.007	0.007	0.007	0	0.000	0.000
12378-PeCDD	1	0.5	0	0.000	0.000	0.024	0.024	0.012	0	0.000	0.000
123678-HxCDD	0.1	0.1	0.045	0.005	0.005	0.091	0.009	0.009	0.011	0.001	0.001
123789-HxCDD	0.1	0.1	0.012	0.001	0.001	0.046	0.005	0.005	0.006	0.001	0.001
123478-HxCDD	0.1	0.1	0.0064	0.001	0.001	0.026	0.003	0.003	0	0.000	0.000
1234678HpCDD	0.01	0.01	0.4	0.004	0.004	1.7	0.017	0.017	0.24	0.002	0.002
OCDD	0.0001	0.001	2.1	0.000	0.002	11	0.001	0.011	1.2	0.000	0.001
2378-TCDF	0.1	0.1	0.036	0.004	0.004	0.14	0.014	0.014	0.011	0.001	0.001
12378-PeCDF	0.05	0.05	0.012	0.001	0.001	0.11	0.006	0.006	0.0024	0.000	0.000
23478-PeCDF	0.5	0.5	0.013	0.007	0.007	0.087	0.044	0.044	0.0035	0.002	0.002
123678HxCDF	0.1	0.1	0.0047	0.000	0.000	0.033	0.003	0.003	0.0048	0.000	0.000
123789-HxCDF	0.1	0.1	0	0.000	0.000	0.037	0.004	0.004	0	0.000	0.000
123478-HxCDF	0.1	0.1	0.0073	0.001	0.001	0.16	0.016	0.016	0.0052	0.001	0.001
234678-HxCDF	0.1	0.1	0	0.000	0.000	0.021	0.002	0.002	0	0.000	0.000
1234678-HpCDF	0.01	0.01	0.015	0.000	0.000	0.13	0.001	0.001	0.021	0.000	0.000
1234789-HpCDF	0.01	0.01	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000
OCDF	0.0001	0.001	0.079	0.000	0.000	0.22	0.000	0.000	0.14	0.000	0.000
Sum Toxic Equiv. (in ng/L)				**0.030**	**0.032**		**0.155**	**0.153**		0.008	0.010

Notes: TEF 1997 = Toxic Equivalency Factor published by the World Health Organization in 1997
TEF 1989 = Toxic Equivalency Factor published by EPA in 1989
Bold numbers indicate sum of TEFs exceed residential DCC of 90 ng/Kg.

Table 12
BASF Riverview, Michigan
Groundwater Samples
Relative Potency of Dioxins
Printed: 1-24-01
Source: Pace Laboratory

URS

			SMW-20			SMW-10		
Congener	TEF 1997	TEF 1989	Conc. (ng/L)	Toxic Equiv. ('97)	Toxic Equiv. ('89)	Conc. (ng/L)	Toxic Equiv. ('97)	Toxic Equiv. ('89)
2378-TCDD	1	1	0	0.000	0.000	0.072	0.072	0.072
12378-PeCDD	1	0.5	0	0.000	0.000	0.19	0.190	0.095
123678-HxCDD	0.1	0.1	1.7	0.170	0.170	1.4	0.140	0.140
123789-HxCDD	0.1	0.1	0.85	0.085	0.085	0.52	0.052	0.052
123478-HxCDD	0.1	0.1	0.56	0.056	0.056	0.16	0.016	0.016
1234678HpCDD	0.01	0.01	29	0.290	0.290	21	0.210	0.210
OCDD	0.0001	0.001	150	0.015	0.150	84	0.008	0.084
2378-TCDF	0.1	0.1	1.7	0.170	0.170	0.33	0.033	0.033
12378-PeCDF	0.05	0.05	1.3	0.065	0.065	0.2	0.010	0.010
23478-PeCDF	0.5	0.5	1.1	0.550	0.550	0.21	0.105	0.105
123678HxCDF	0.1	0.1	0.64	0.064	0.064	0.1	0.010	0.010
123789-HxCDF	0.1	0.1	0	0.000	0.000	0.073	0.007	0.007
123478-HxCDF	0.1	0.1	2.8	0.280	0.280	0.34	0.034	0.034
234678-HxCDF	0.1	0.1	0	0.000	0.000	0.11	0.011	0.011
1234678-HpCDF	0.01	0.01	3.8	0.038	0.038	0.45	0.005	0.005
1234789-HpCDF	0.01	0.01	0	0.000	0.000	0	0.000	0.000
OCDF	0.0001	0.001	2.4	0.000	0.002	0.36	0.000	0.000
Sum Toxic Equiv. (in ng/L)				**1.783**	**1.920**		**0.903**	**0.884**

Table 13
Field Hydraulic Conductivity Estimates - August and November 2000
BASF Property, Riverview Michigan

WELL #	TEST DATE FH	TEST DATE RH	TEST UNIT	ESTIMATED K (FT/MIN) FH	ESTIMATED K (FT/MIN) RH	GWEL-SCREEN	SCREENED IN
SMW1	08/24/00	08/24/00	W	NV	1.43 E-3	IN	SANDY FILL
IMW1	08/22/00	08/22/00	W	6.244 E-5	5.288 E-5	ABOVE	SILTY-CLAY, CLAY
SMW4	NP	08/28/00	U	NV	1.395 E-3	IN	SILTY FILL, SAND, SILTY CLAY
SMW4-99	08/22/00	08/22/00	P	5.028 E-4	4.099 E-4	ABOVE / CLOSE	SILTY-SANDY-FILL, CLAY
SMW5	08/22/00	08/22/00	W	NV	9.383 E-3	IN	FILL, SANDS, SOFT CLAY
SMW5-99	08/22/00	08/22/00	W	4.182 E-4	6.115 E-4	ABOVE	FILL, SILTY CLAY, STIFF CLAY
IMW5	08/21/00	08/21/00	P	1.572 E-4	1.283 E-4	ABOVE	FILL, SAND, SILTY CLAY, STIFF CLAY
SMW6	08/22/00	08/22/00	W	1.341 E-3	3.674 E-3	ABOVE	SANDY GRAVEL, FILL
SMW6-99	08/23/00	08/23/00	W	3.665 E-5	5.917 E-5	CLOSE	CLAY AND SAND
IMW6	08/22/00	08/22/00	P	1.352 E-3	1.433 E-3	ABOVE	SANDY GRAVEL, FILL
SMW7	08/23/00	08/23/00	P	1.987 E-4	2.239 E-4	ABOVE	SANDY FILL, CLAY FILL
SMW8	11/17/00	11/17/00	U	NV	NP DRY	IN	SILTY CLAY
SMW9	08/22/00	08/22/00	P	NV	1.174 E-2	IN	SANDY FILL
IMW9	08/22/00	08/22/00	W	4.769 E-4	4.507 E-4	ABOVE	SANDY FILL, CLAY AND SILT
DMW9	08/31/00	11/15/00	U/C	3.846 E-7	4.33 E-7	ABOVE	STIFF-V.SOFT CLAYS
SMW10	08/22/00	08/22/00	W	1.035 E-3	3.351 E-3	ABOVE	CONCRETE, GRAVEL, MISC FILL
IMW10	08/22/00	08/22/00	P	3.001 E-4	3.072 E-4	ABOVE	FILL, PEAT, SILTY CLAY
DMW10	11/15-16/00	11/16/00	C	3.005 E-8	2.812 E-7	ABOVE	STIFF-V.SOFT CLAYS
SMW11	08/23/00	08/23/00	P	NV	3.571 E-4	IN	SAND, FILL
IMW11	08/23/00	08/23/00	W	2.431 E-4	3.097 E-4	ABOVE	FILL, PEAT, SILTY CLAY
DMW11	11/15/00	11/15/00	C	1.655 E-7	5.112 E-7	ABOVE	HARD-SOFT, SILTY-CLAY
SMW12	NP	08/29/00	U	NV	1.529 E-5	IN	GRAVEL, SILT, SANDY-CLAY
IMW12	08/23/00	08/23/00	P	1.465 E-4	2.483 E-4	ABOVE	FILL AND ORGANICS
DMW12	11/15-16/00	11/16/00	C	2.854 E-7	3.172 E-7	ABOVE	V.STIFF-SOFT, SILTY-CLAY
SMW13	08/25/00	08/25/00	W	NV	1.694 E-3	IN	FILL, CLAYS, SILT
IMW13	08/24/00	08/24/00	W	1.103 E-4	1.116 E-4	ABOVE	SILT, SILTY-SAND,WOOD, SILTY-CLAY
DMW13	11/16/00	11/16/00	C	2.657 E-7	3.166 E-7	ABOVE	V.STIFF-V.SOFT, SILTY-CLAY
SMW14	08/23/00	08/23/00	P	NV	2.241 E-1	IN	GRAVEL, CONCRETE, SILTY-CLAY
SMW15	11/1600	11/16/00	C	NV	2.65 E-6	IN	FILL, SILTY-CLAY, SILT
SMW16	NP	08/29/00	U	NV	1.17 E-2	IN	SLAG, GRAVEL
SMW17	08/23/00	08/23/00	P	NV	2.729 E-3	IN	SILTY-CLAY, GRAVEL, SLAG, SILT, CLAY
SMW18	11/17/00	11/17/00	C	NV	3.156 E-5	IN	SILTY-GRAVEL, CLAY
SMW19	08/23/00	08/23/00	P	NV	5.045 E-4	IN / CLOSE	FILL, CLAY, SAND, SILTY-CLAY
SMW20	NP	08/25/00	P	NV	2.312 E-3	IN	FILL, SLAG, SILT
SMW21	08/25/00	08/25/00	P	NV	1.794 E-3	IN	FILL, CINDERS, CLAY, GRAVEL, SILTY-CLAY
SMW22	NP	08/24/00	P	NV	4.472 E-5	IN	FILL, CINDERS, SILTY CLAY
SMW23	NP	08/28/00	U	NV	1.528 E-2	IN	GRAVEL, SAND, SILT, CLAY, FILL
SMW24	08/24/00	08/24/00	P	NV	1.348 E-1	IN	SAND, GRAVEL
SMW25	08/24/00	08/24/00	P	NV	1.164 E-2	IN / CLOSE	FILL, PEAT, SILTY-FILL, CLAY
SMW26	08/30/00	11/16/00	U	6.377 E-6	NO	ABOVE	CLAYEY-SAND, SILT, SLAG, CLAY
SMW27	08/31/00	08/31/00	U	3.177 E-4	7.014 E-4	ABOVE	SLAG, CINDERS, SANDS, SILT
PZ1	08/24/00	08/24/00	P	1.186 E-5	1.661 E-5	ABOVE	GRAY-GREEN CLAY BELOW FILL

NOTES:
FH - Falling head slug test.
RH - Rising head slug test.
K - Hydraulic conductivity.
NP - Not performed. / NP DRY-Not enough water to run test
NV - Test not valid. Static water level within screened interval.
NO - Solution could not be obtained from data.
Test unit - W = URS unit first series; U = URS unit second series; C = URS unit third series; P = Rental unit.

URS

Table 14
Mean Hydraulic Conductivities - August and November 2000
BASF Property, Riverview Michigan

Shallow Monitoring Wells

	ESTIMATED K (FT/MIN)	
WELL #	FH	RH
SMW1	NV	1.43E-03
SMW4	NV	1.40E-03
SMW4-99	5.03E-04	4.10E-04
SMW5	NV	9.38E-03
SMW5-99	4.18E-04	6.12E-04
SMW6	1.34E-03	3.67E-03
SMW6-99	3.67E-05	5.92E-05
SMW7	1.99E-04	2.24E-04
SMW8	NV	NO
SMW9	NV	1.17E-02
SMW10	1.04E-03	3.35E-03
SMW11	NV	3.57E-04
SMW12	NV	1.53E-05
SMW13	NV	1.69E-03
SMW14	NV	2.24E-01
SMW15	NV	2.65E-06
SMW16	NV	1.17E-02
SMW17	NV	2.73E-03
SMW18	NV	3.16E-05
SMW19	NV	5.05E-04
SMW20	NV	2.31E-03
SMW21	NV	1.79E-03
SMW22	NV	4.47E-05
SMW23	NV	1.53E-02
SMW24	NV	1.35E-01
SMW25	NV	1.16E-02
SMW26	6.38E-06	NO
SMW27	3.18E-04	7.01E-04
PZ1	1.19E-05	1.66E-05
Mean	4.30E-04	1.63E-02

Intermediate Monitoring Wells

	ESTIMATED K (FT/MIN)	
WELL #	FH	RH
IMW1	6.24E-05	5.29E-05
IMW5	1.57E-04	1.28E-04
IMW6	1.35E-03	1.43E-03
IMW9	4.77E-04	4.51E-04
IMW10	3.00E-04	3.07E-04
IMW11	2.43E-04	3.10E-04
IMW12	1.47E-04	2.48E-04
IMW13	1.10E-04	1.12E-04
Mean	3.56E-04	3.80E-04

Deep Monitoring Wells

	ESTIMATED K (FT/MIN)	
WELL #	FH	RH
DMW9	3.85E-07	4.33E-07
DMW10	3.01E-08	2.81E-07
DMW11	1.66E-07	5.11E-07
DMW12	2.85E-07	3.17E-07
DMW13	2.66E-07	3.17E-07
Mean	2.26E-07	3.72E-07

NOTES:
FH - Falling head slug test.
RH - Rising head slug test.
K - Hydraulic conductivity.
NP - Not performed.
NV - Test not valid. Static water level within screened interval.
NO - Solution could not be obtained from data.

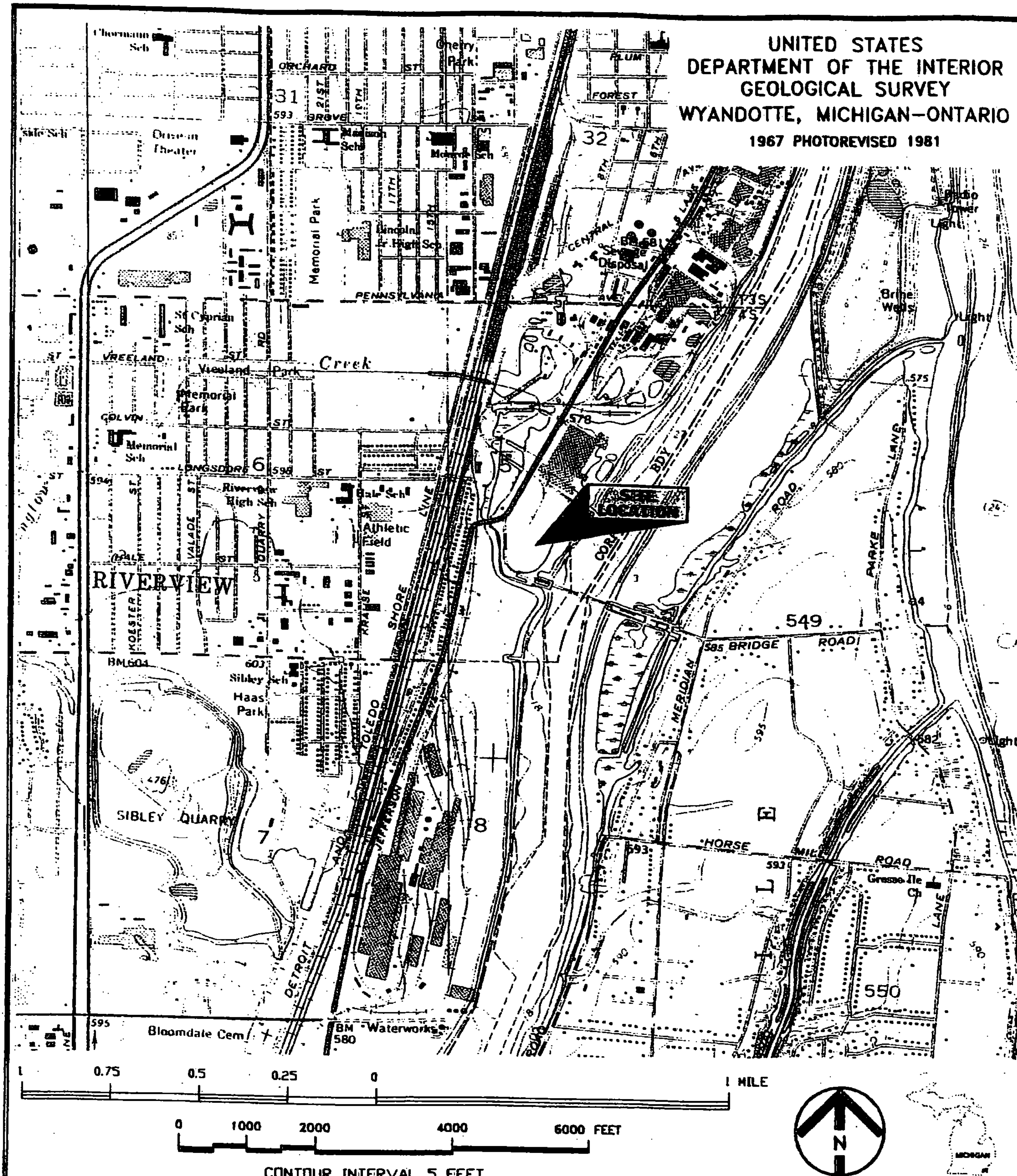
Table 15
BASF Riverview, Michigan
Concrete Samples
GSI Criteria Comparison
Printed: 1-31-00

SAMPLE # / ANALYTE		GSI Criteria	RR-1 BOTTOM J035003 8/14/00	RR-1 MIDDLE J035002 8/14/00	RR-1 TOP J035001 8/14/00	RR-2 BOTTOM J035006 8/14/00	RR-2 MIDDLE J035005 8/14/00	RR-2 TOP J035004 8/14/00	RR-3 BOTTOM J035009 8/14/00	RR-3 MIDDLE J035008 8/14/00
Mercury	mg/kg	0.13	0.05 ND	0.05 ND	0.05 ND	0.05 ND	0.05 ND	0.05 ND	**0.21**	0.05 ND

SAMPLE # / ANALYTE		GSI Criteria	RR-3 TOP J035007 8/14/00	RR-4 BOTTOM J035012 8/14/00	RR-4 MIDDLE J035011 8/14/00	RR-4 TOP J035010 8/14/00	RR-5 BOTTOM J035015 8/14/00	RR-5 MIDDLE J035014 8/14/00	RR-5 TOP J035013 8/14/00
Mercury	mg/kg	0.13	0.05 ND	**0.2**	0.05 ND	**0.16**	**0.3**	0.1	0.05 ND

Bold results indicate GSI Criterion exceedance.

Figures



GENERAL LOCATION MAP

BASF PROPERTY - RIVERVIEW, MICHIGAN

DRAWN BY: TBC	CHECKED BY: TLW	PROJECT NUMBER: 8E06216	DATE: 4-18-99	FIGURE NO: 1

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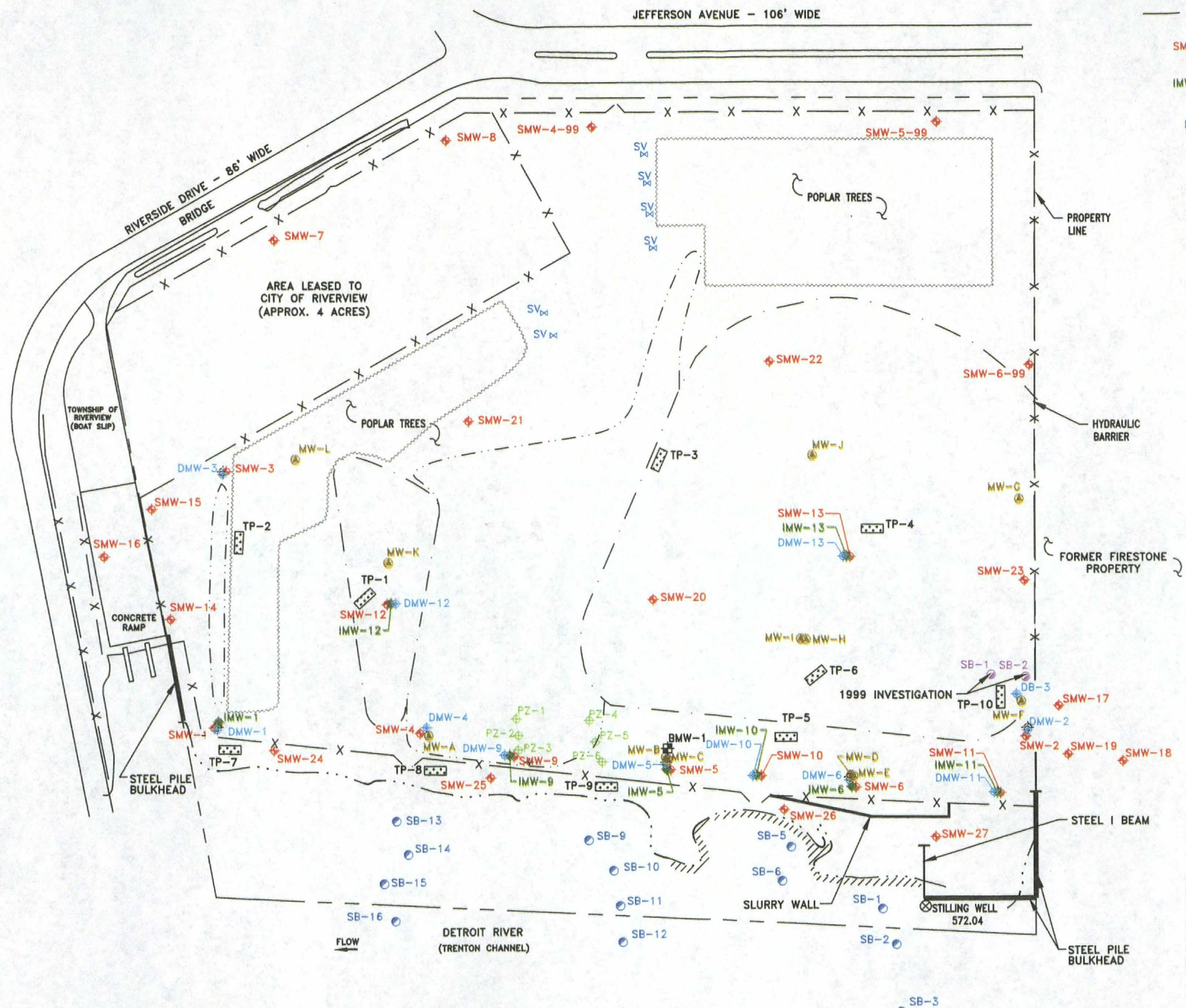
URS Greiner Woodward Clyde



LEGEND

- X — FENCE
- SMW-22 — SHALLOW MONITORING WELL
- IMW-6 — INTERMEDIATE MONITORING WELL
- DMW-1 — DEEP MONITORING WELL
- BMW-1 — BEDROCK MONITORING WELL
- PIEZ-1 — PIEZOMETER
- SV — SPRINKLER VALVE
- SB-1 — SOIL BORING/TEMPORARY WELL (1999 INVESTIGATION)
- MW-G — MONITORING WELL
- SB-1 — SOIL BORING IN RIVER
- TP-3 — TEST PIT AREA
- CAPPED AREA PER CONSENT DECREE
- AREA CAPPED IN 1999
- CONCRETE RIP-RAP

NOTES:
STILLING WELL ELEVATION COLLECTED ON 9/5/00.
FORMER MONITORING WELL MW-M WAS REMOVED DURING THE EXCAVATION OF TEST PIT #10.

N

0 75 150 300
APPROXIMATE SCALE IN FEET

URS
800 W. ST. CLAIR AVE.
CLEVELAND, OHIO 44113

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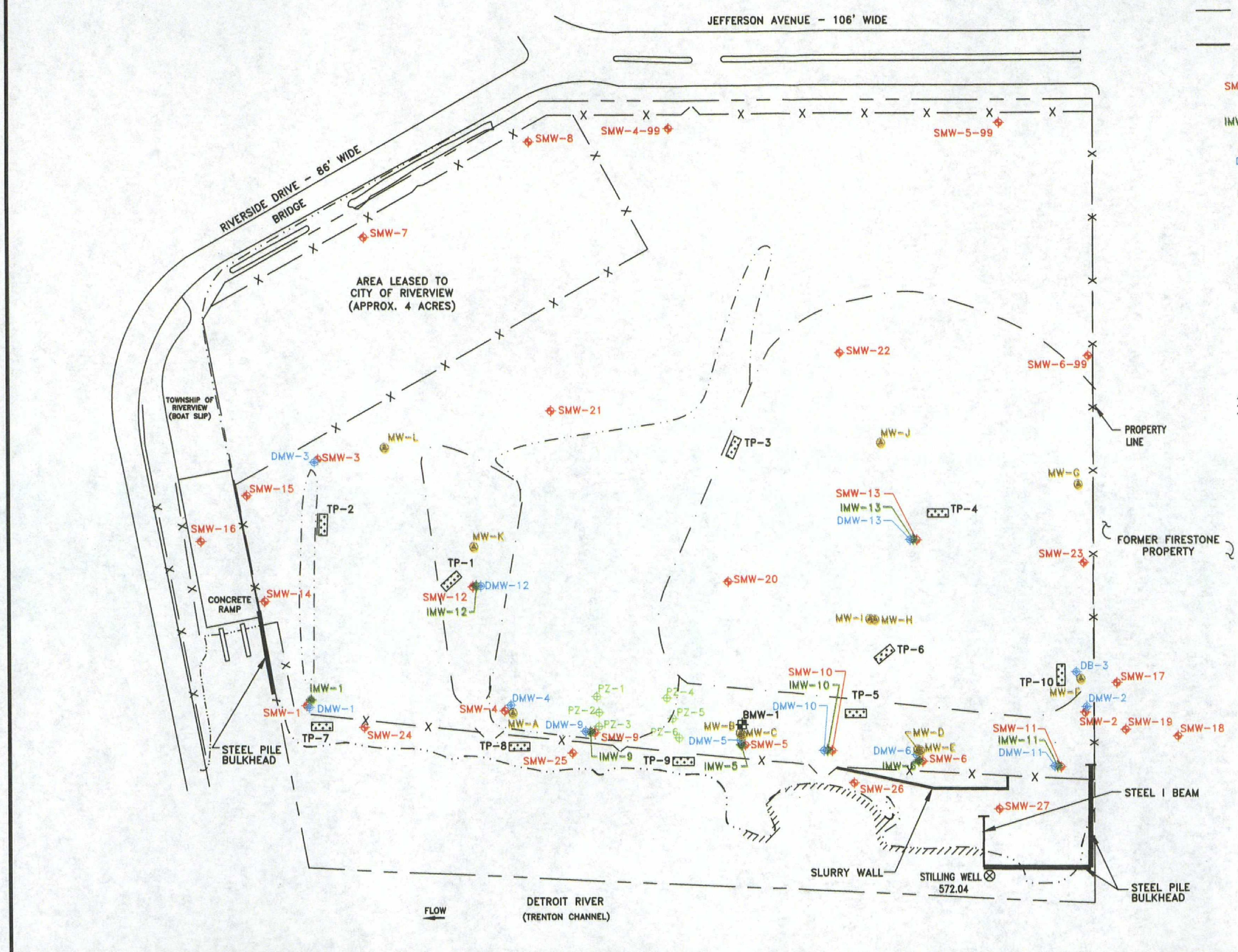
CLIENT: BASF

LOCATION: RIVERVIEW, MICHIGAN

SITE FEATURES MAP

DRAWN BY:	CHECKED BY:	PROJECT NO:	DATE:	FIGURE NO:
ERB	TLW	8E06216	12/5/00	2



LEGEND

X — FENCE

AREA CAPPED PER CONSENT DECREE

SMW-22 SHALLOW MONITORING WELL

IMW-6 INTERMEDIATE MONITORING WELL

DMW-1 DEEP MONITORING WELL

BMW-1 BEDROCK MONITORING WELL

PIEZ-1 PIEZOMETER

MW-G MONITORING WELL

TP-3 TEST PIT AREA

CAPPED AREA PER CONSENT DECREE

AREA CAPPED IN 1999

CONCRETE RIP-RAP

NOTES:
STILLING WELL ELEVATION COLLECTED ON 9/5/00.
FORMER MONITORING WELL MW-M WAS REMOVED DURING THE EXCAVATION OF TEST PIT #10.

0 75 150 300
APPROXIMATE SCALE IN FEET

URS
623 W. ST. CLAIR AVE.
CLEVELAND, OHIO 44312

Q:\BASF\8E06216\C\servpoint.dwg

CLIENT: BASF

LOCATION: RIVERVIEW, MICHIGAN

MONITORING WELL/PIEZOMETER LOCATION MAP

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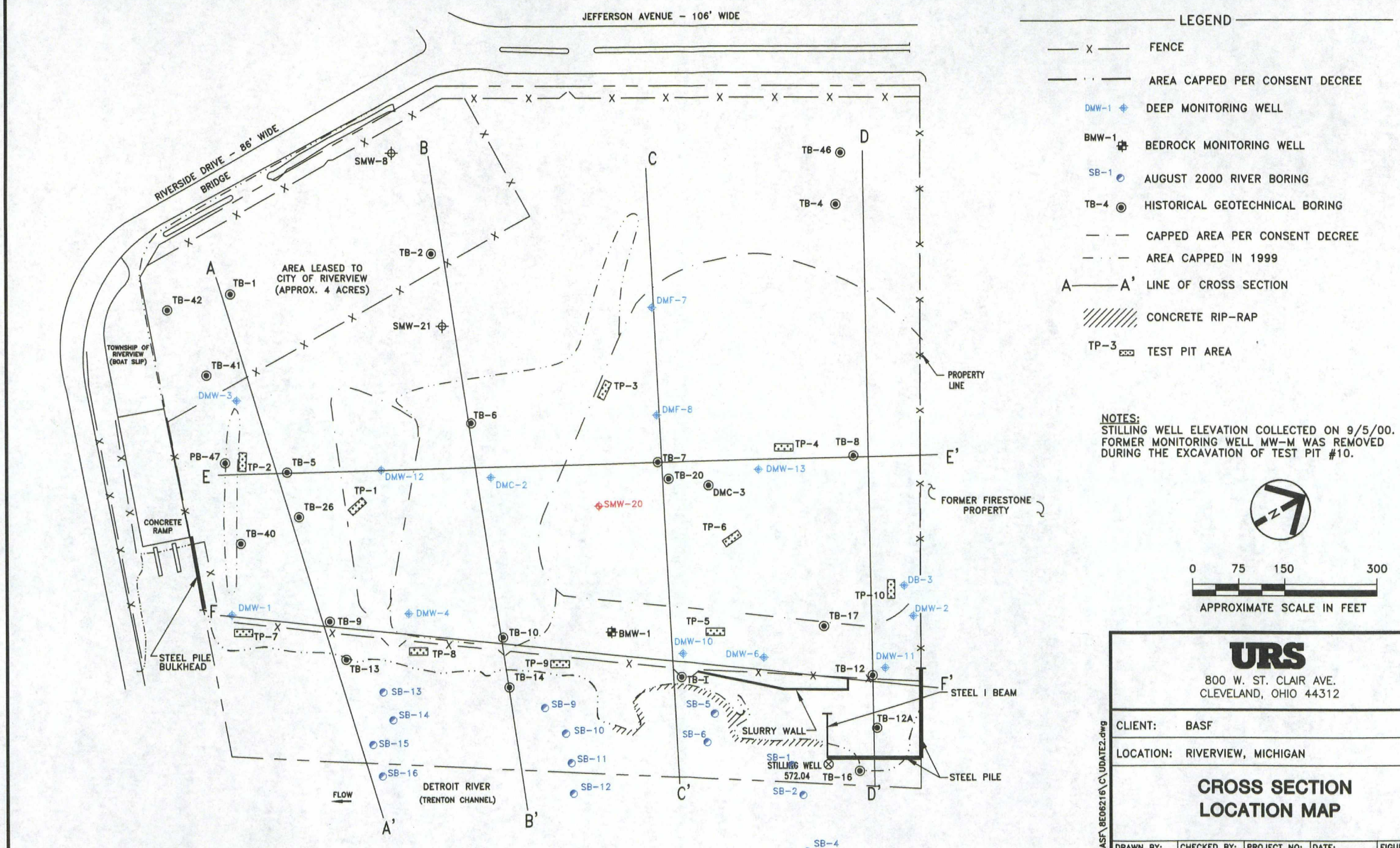

NOTES:
STILLING WELL ELEVATION COLLECTED ON 9/5/00.
FORMER MONITORING WELL MW-M WAS REMOVED DURING THE EXCAVATION OF TEST PIT #10.

URS
800 W. ST. CLAIR AVE.
CLEVELAND, OHIO 44312

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CLIENT:	BASF
LOCATION:	RIVERVIEW, MICHIGAN

CROSS SECTION LOCATION MAP

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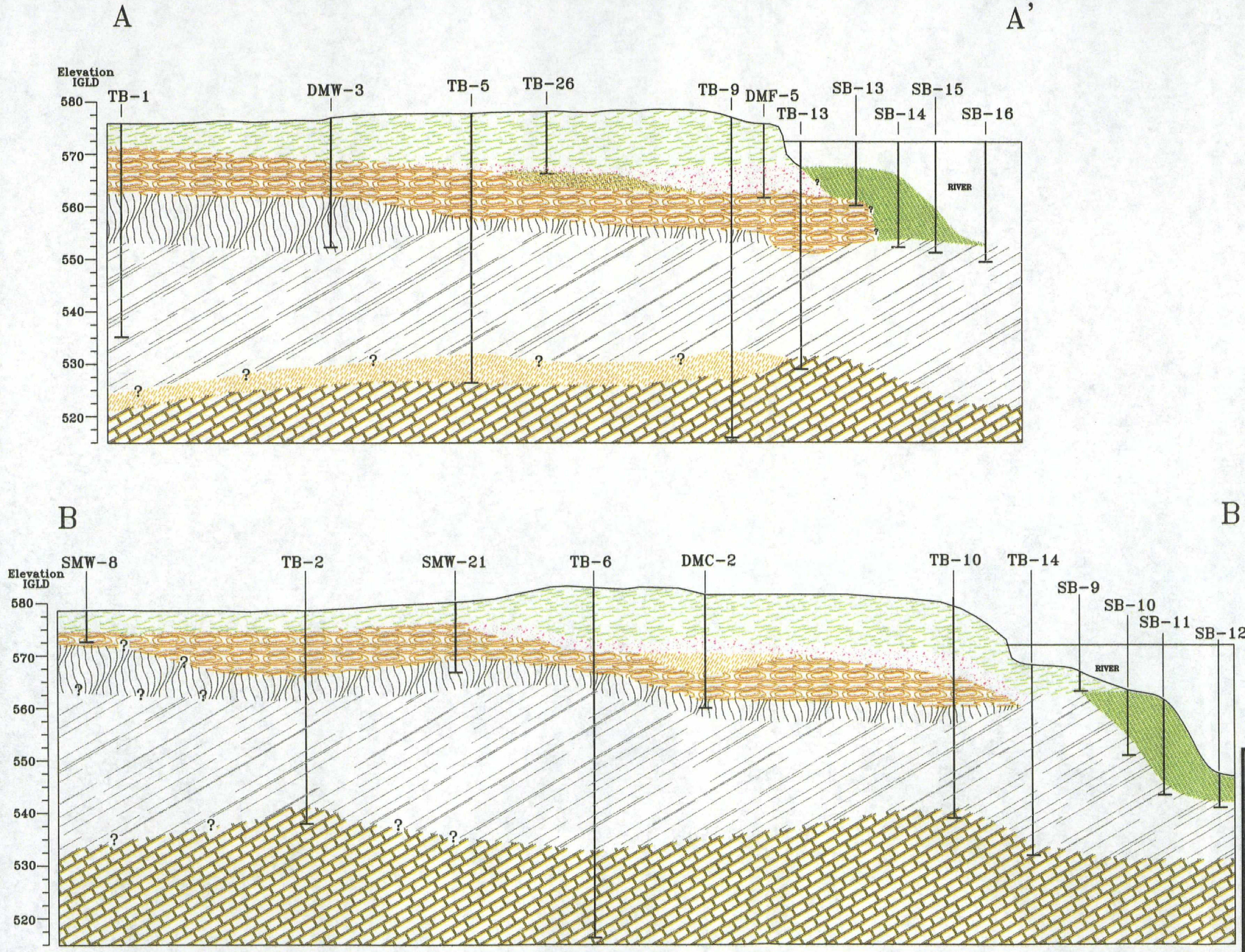

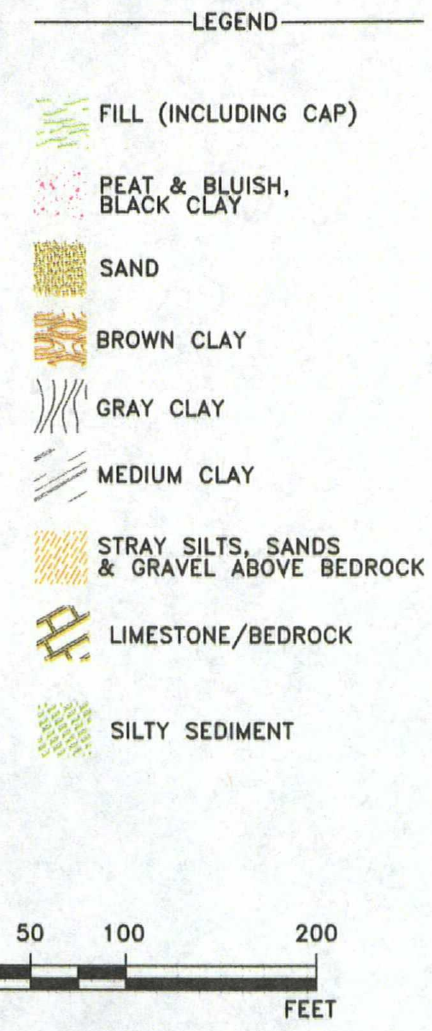

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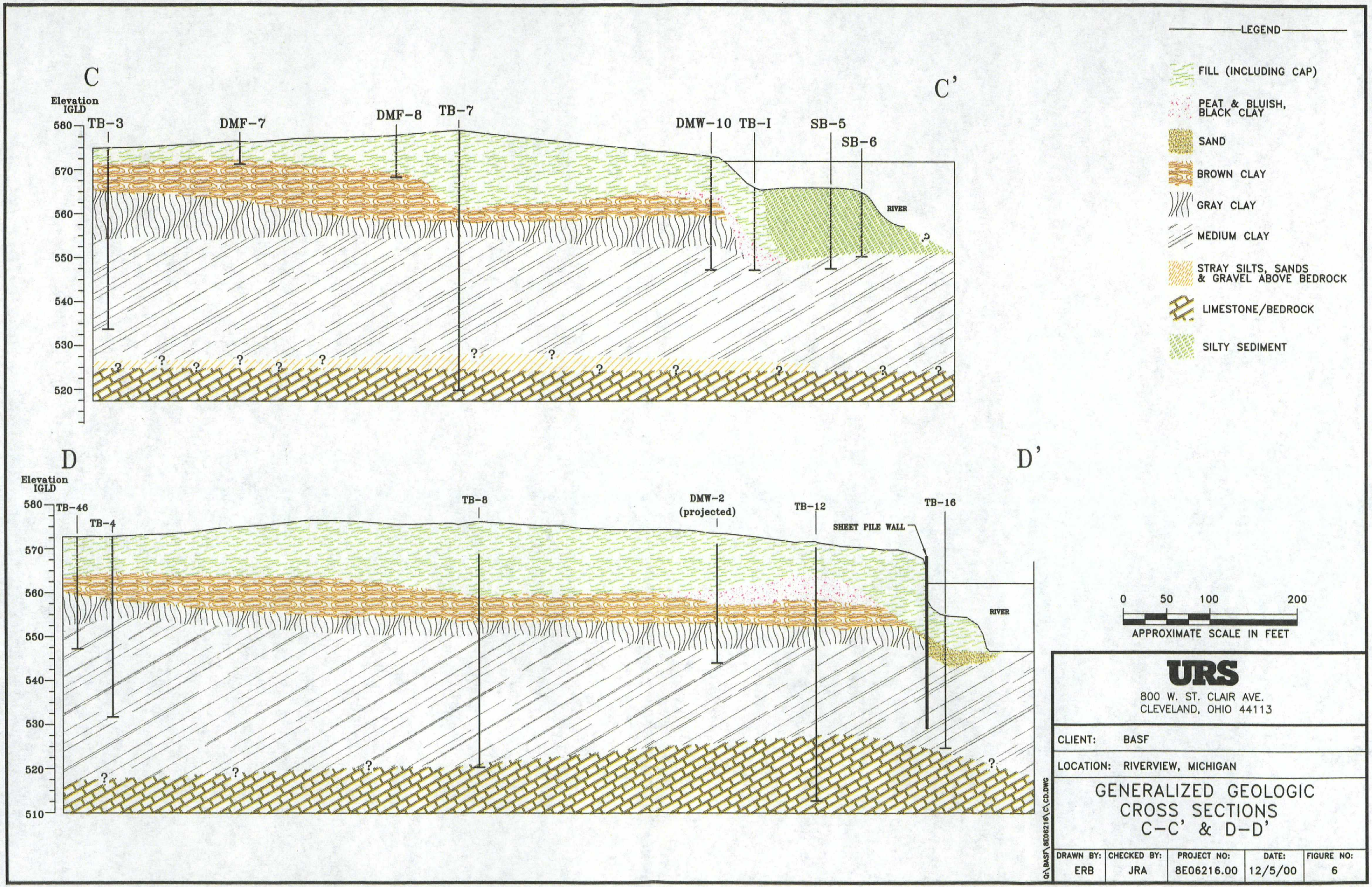
URS
800 W. ST. CLAIR AVE.
CLEVELAND, OHIO 44113

CLIENT: BASF

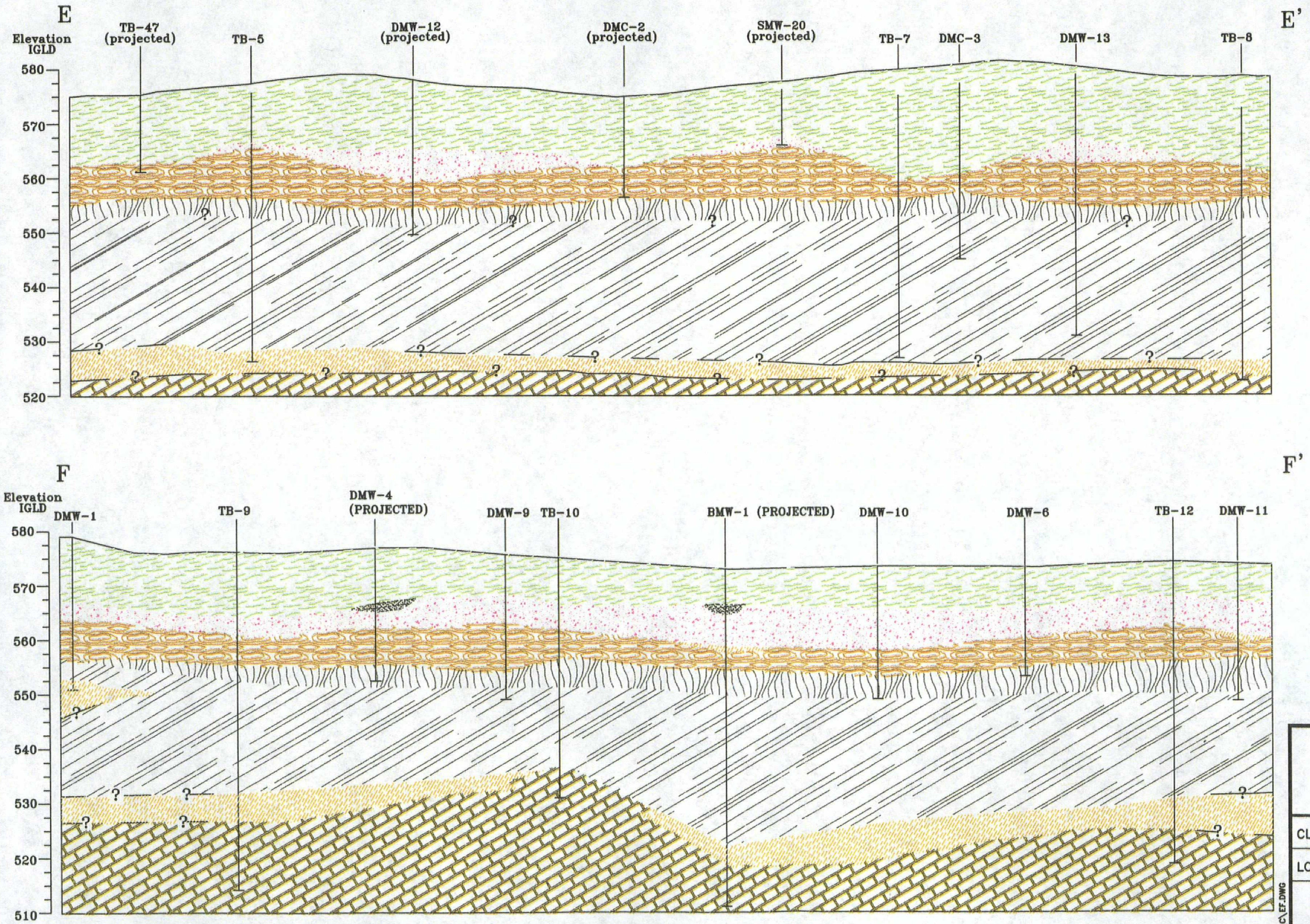
LOCATION: RIVERVIEW, MICHIGAN

CROSS SECTIONS
A–A' & B–B'

DRAWN BY:	CHECKED BY:	PROJECT NO:	DATE:	FIGURE NO:
ERB	JRA	8E06216.00	12/6/00	5



C
C'
Elevation IGLD
580
570
560
550
540
530
520
TB-3
DMF-7
DMF-8
TB-7
DMW-10
TB-I
SB-5
SB-6
RIVER
D
D'
Elevation IGLD
580
570
560
550
540
530
520
510
TB-46
TB-4
TB-8
DMW-2 (projected)
TB-12
SHEET PILE WALL
TB-16
RIVER
LEGEND
FILL (INCLUDING CAP)
PEAT & BLUISH, BLACK CLAY
SAND
BROWN CLAY
GRAY CLAY
MEDIUM CLAY
STRAY SILTS, SANDS & GRAVEL ABOVE BEDROCK
LIMESTONE/BEDROCK
SILTY SEDIMENT
0 50 100 200
APPROXIMATE SCALE IN FEET
URS
800 W. ST. CLAIR AVE.
CLEVELAND, OHIO 44113
CLIENT: BASF
LOCATION: RIVERVIEW, MICHIGAN
GENERALIZED GEOLOGIC CROSS SECTIONS C-C' & D-D'
DRAWN BY: ERB
CHECKED BY: JRA
PROJECT NO: 8E06216.00
DATE: 12/5/00
FIGURE NO: 6
Q:\BASF\8E06216\C\CD.DWG



URS

800 W. ST. CLAIR AVE.
CLEVELAND, OHIO 44113

CLIENT: BASF

LOCATION: RIVERVIEW, MICHIGAN

GENERALIZED GEOLOGIC CROSS SECTIONS E-E' & F-F'

DRAWN BY:	CHECKED BY:	PROJECT NO:	DATE:	FIGURE NO:
ERB	JRA	8E06216.00	12/5/00	7

Q:\BASF\8E06216\C\EF.DWG

LEGEND

— X —	FENCE
SMW-22	SHALLOW MONITORING WELL
PIEZ-1	PIEZOMETER
MW-G	MONITORING WELL
NM	NOT MEASURED
575.56	GROUNDWATER ELEVATION (9/5/00)
575	GROUNDWATER CONTOUR LINE (CONTOUR INTERVAL = 1 FOOT)
— - —	CAPPED AREA PER CONSENT DECREE
— · —	AREA CAPPED IN 1999

NOTES:
STILLING WELL ELEVATION COLLECTED ON 9/5/00.
FORMER MONITORING WELL MW-M WAS REMOVED DURING THE EXCAVATION OF TEST PIT #10.

N

0 75 150 300

APPROXIMATE SCALE IN FEET

URS
800 W. ST. CLAIR AVE
CLEVELAND, OHIO 44113

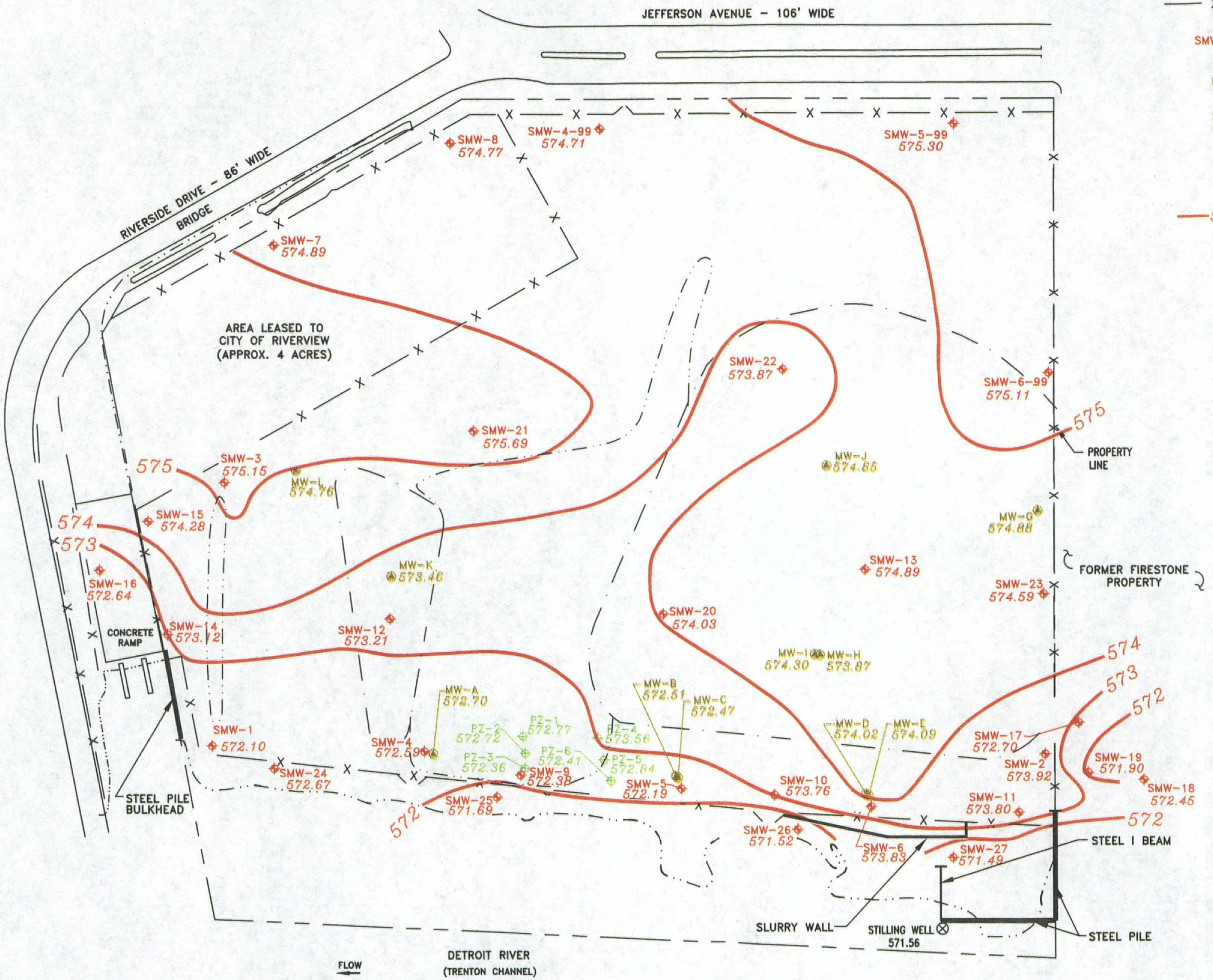
Q:\BASF\8E06216\C\SHGCM3Q00.dwg

CLIENT: BASF

LOCATION: RIVERVIEW, MICHIGAN

POTENTIOMETRIC SURFACE OF UPPER SATURATED ZONE SEPTEMBER 5, 2000

DRAWN BY:	CHECKED BY:	PROJECT NO:	DATE:	FIGURE NO:
ERB	TLW	8E06216	12/5/00	8



LEGEND

—X—	FENCE
SMW-22	SHALLOW MONITORING WELL
PIEZ-1	PIEZOMETER
MW-G	MONITORING WELL
575.56	GROUNDWATER ELEVATION (10/3/00)
—575—	GROUNDWATER CONTOUR LINE (CONTOUR INTERVAL = 1 FOOT)
— · —	CAPPED AREA PER CONSENT DECREE
— · · —	AREA CAPPED IN 1999

NOTES:
STILLING WELL ELEVATION COLLECTED ON 10/3/00.
FORMER MONITORING WELL MW-M WAS REMOVED DURING THE EXCAVATION OF TEST PIT #10.

N

0 75 150 300
APPROXIMATE SCALE IN FEET

Q:\BASF\8E06216\C\SHGCM3Q00oct.dwg

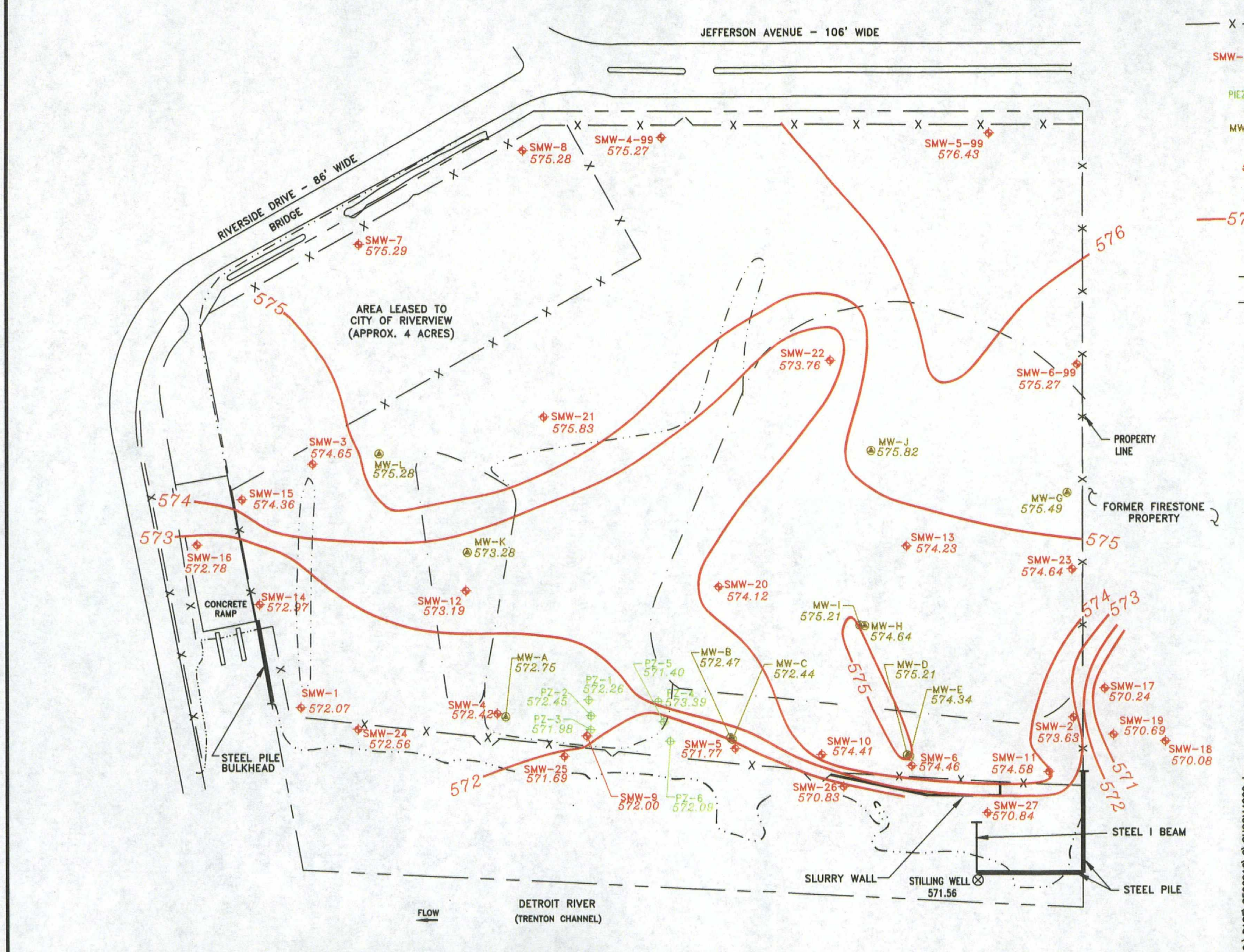
URS
800 W. ST. CLAIR AVE.
CLEVELAND, OHIO 44113

CLIENT: BASF

LOCATION: RIVERVIEW, MICHIGAN

POTENTIOMETRIC SURFACE OF UPPER SATURATED ZONE OCTOBER 3, 2000

DRAWN BY:	CHECKED BY:	PROJECT NO:	DATE:	FIGURE NO:
ERB	TLW	8E06216	12/5/00	9



LEGEND

— X —	FENCE
SMW-22	SHALLOW MONITORING WELL
PIEZ-1	PIEZOMETER
MW-G	MONITORING WELL
570.80	GROUNDWATER ELEVATION (11/16/00)
—575—	GROUNDWATER CONTOUR LINE (CONTOUR INTERVAL = 1 FOOT)
—·—	CAPPED AREA PER CONSENT DECREE
—··—	AREA CAPPED IN 1999

NOTES:

STILLING WELL ELEVATION COLLECTED ON 11/16/00.

FORMER MONITORING WELL MW-M WAS REMOVED DURING THE EXCAVATION OF TEST PIT #10.

GROUNDWATER ELEVATION FOR SMW-17, SMW-18 & SMW-19 COLLECTED ON 11/17/00.

N

0 75 150 300

APPROXIMATE SCALE IN FEET

URS

800 W. ST. CLAIR AVE.
CLEVELAND, OHIO 44113

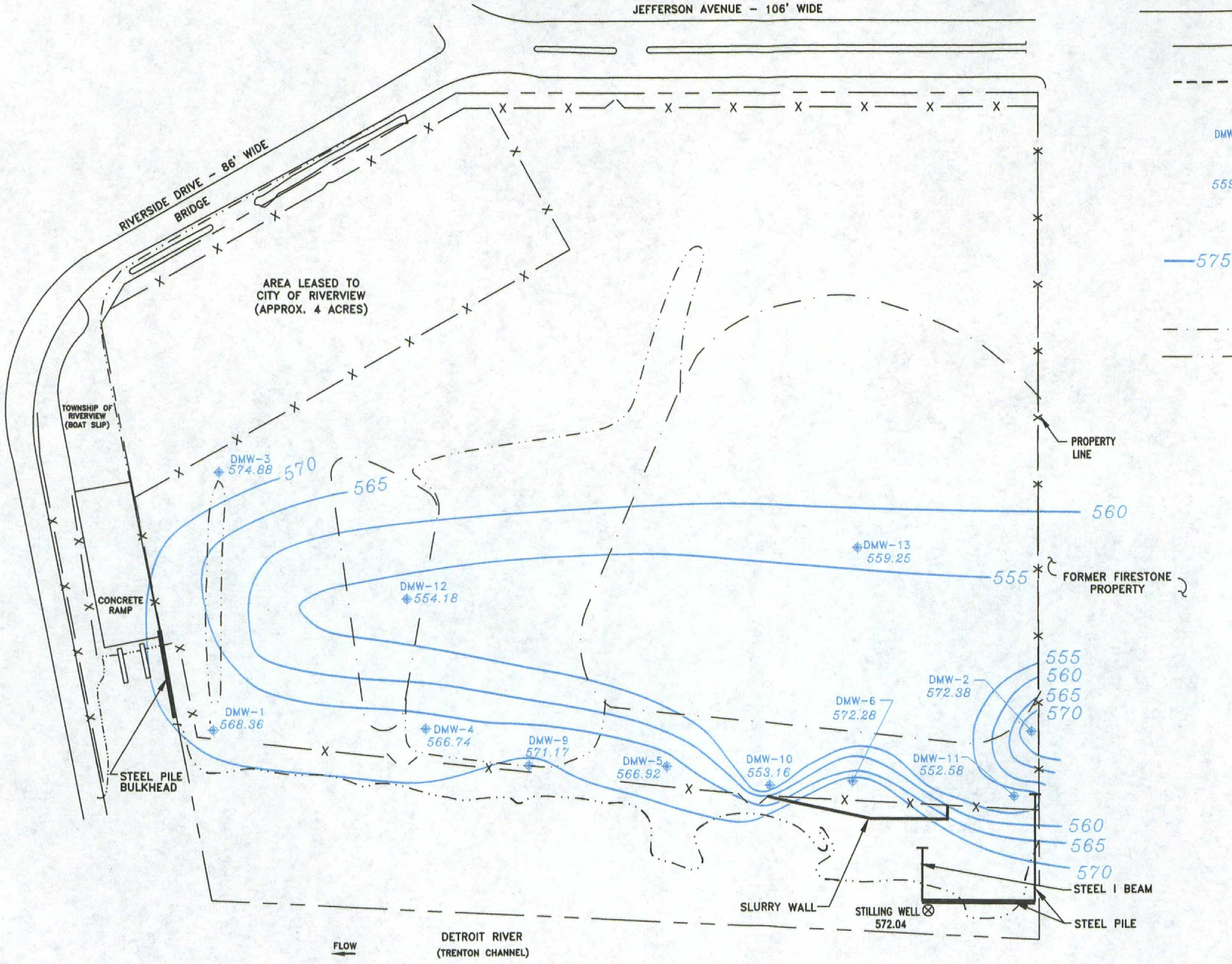
Q:\BASF\8E06216\C\SHGCM4Q00.dwg

CLIENT: BASF

LOCATION: RIVERVIEW, MICHIGAN

POTENTIOMETRIC SURFACE OF UPPER SATURATED ZONE NOVEMBER 16, 2000

DRAWN BY:	CHECKED BY:	PROJECT NO:	DATE:	FIGURE NO:
ERB	TLW	8E06216	12/5/00	10



LEGEND

FENCE

CONCRETE LINED DITCH

DMW-1 DEEP MONITORING WELL

559.25 GROUNDWATER ELEVATION (9/5/00)

575 GROUNDWATER CONTOUR LINE (CONTOUR INTERVAL = 1 FOOT)

CAPPED AREA PER CONSENT DECREE

AREA CAPPED IN 1999

NOTES:
STILLING WELL ELEVATION COLLECTED ON 9/5/00. FORMER MONITORING WELL MW-M WAS REMOVED DURING THE EXCAVATION OF TEST PIT #10.

N

0 75 150 300

APPROXIMATE SCALE IN FEET

URS

800 W. ST. CLAIR AVE.
CLEVELAND, OHIO 44113

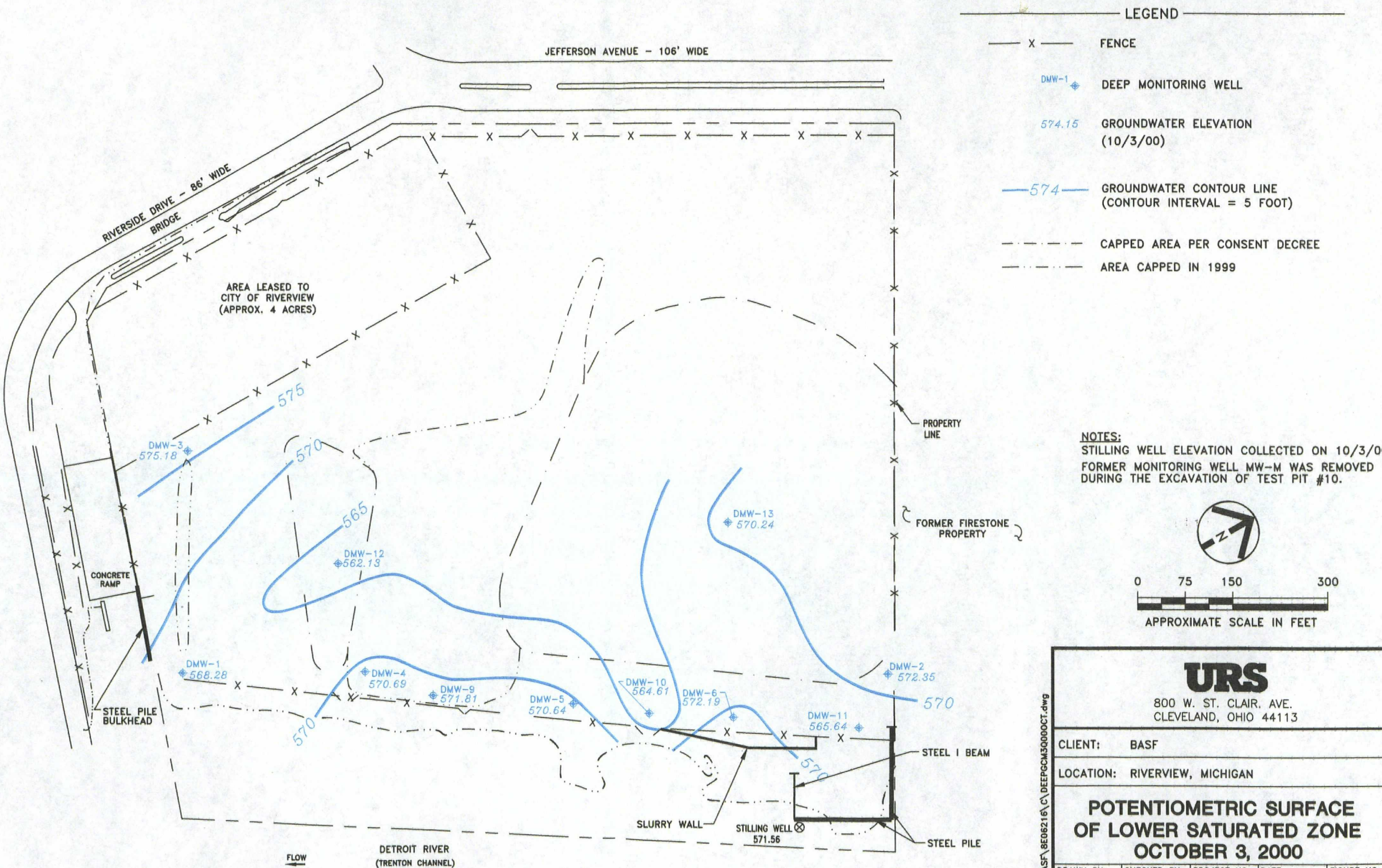
CLIENT: BASF

LOCATION: RIVERVIEW, MICHIGAN

POTENTIOMETRIC SURFACE OF LOWER SATURATED ZONE SEPTEMBER 5, 2000

DRAWN BY:	CHECKED BY:	PROJECT NO:	DATE:	FIGURE NO:
ERB	TLW	8E06216	12/5/00	11

Q:\BASF\8E06216\C\deepcon.dwg



NOTES:
STILLING WELL ELEVATION COLLECTED ON 10/3/00.
FORMER MONITORING WELL MW-M WAS REMOVED DURING THE EXCAVATION OF TEST PIT #10.

Q:\BASF\8E06216\C\DEEPGCM30000CT.dwg

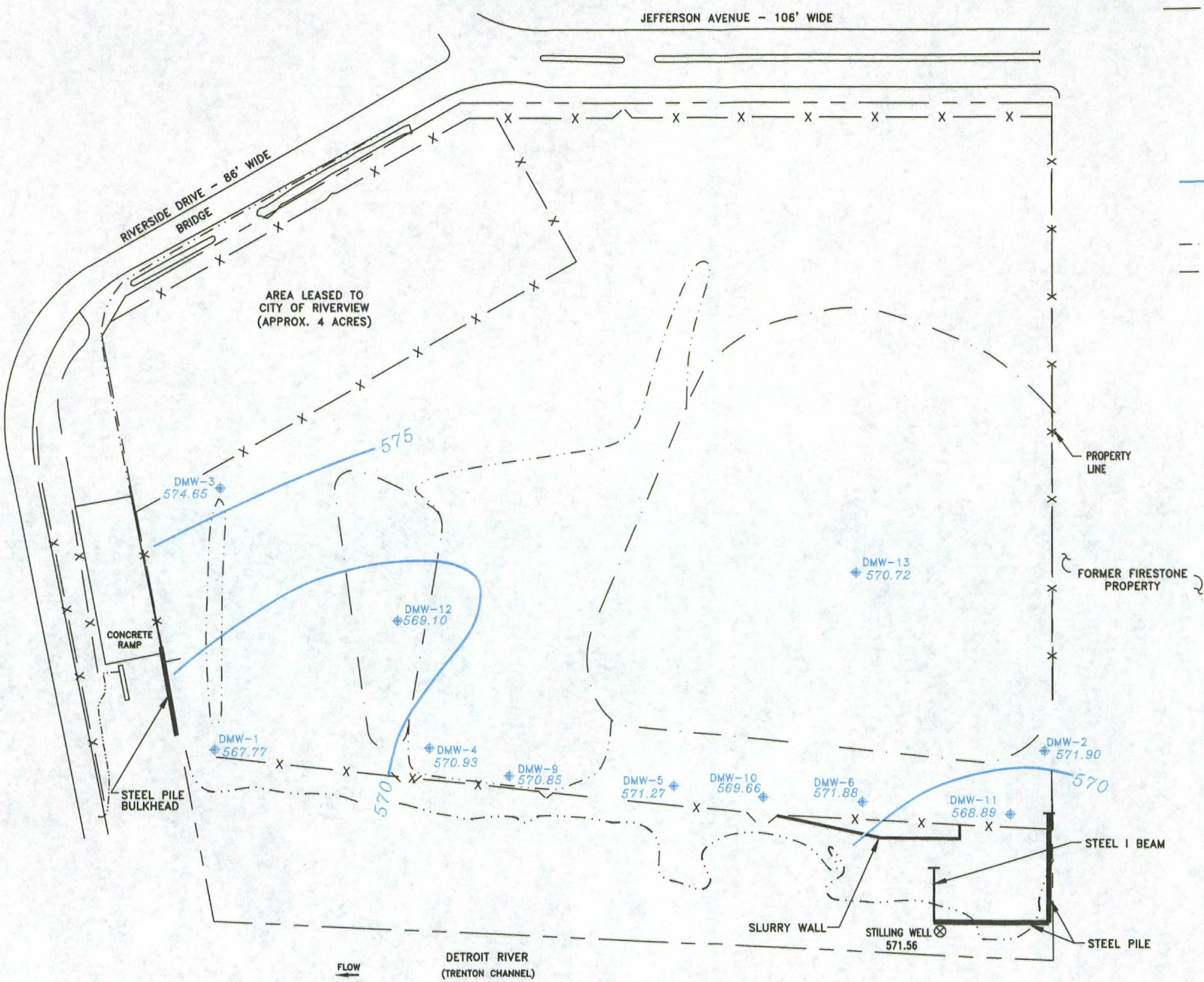
URS
800 W. ST. CLAIR. AVE.
CLEVELAND, OHIO 44113

CLIENT: BASF

LOCATION: RIVERVIEW, MICHIGAN

POTENTIOMETRIC SURFACE OF LOWER SATURATED ZONE OCTOBER 3, 2000

DRAWN BY:	CHECKED BY:	PROJECT NO:	DATE:	FIGURE NO:
ERB	TLW	8E06216	12/5/00	12



LEGEND

- X — FENCE
- DMW-1 — DEEP MONITORING WELL
- 570.72 — GROUNDWATER ELEVATION (11/16/00)
- —575— — GROUNDWATER CONTOUR LINE (CONTOUR INTERVAL = 5 FOOT)
- — · — · — CAPPED AREA PER CONSENT DECREE
- — · · — · · — AREA CAPPED IN 1999

NOTES:

STILLING WELL ELEVATION COLLECTED ON 11/16/00.

FORMER MONITORING WELL MW-M WAS REMOVED DURING THE EXCAVATION OF TEST PIT #10.

N

0 75 150 300

APPROXIMATE SCALE IN FEET

Q:\BASF\8E06216\C\DEEPGCM4000.dwg

URS

800 W. ST. CLAIR. AVE.
CLEVELAND, OHIO 44113

CLIENT: BASF

LOCATION: RIVERVIEW, MICHIGAN

POTENTIOMETRIC SURFACE OF LOWER SATURATED ZONE NOVEMBER 16, 2000

DRAWN BY:	CHECKED BY:	PROJECT NO:	DATE:	FIGURE NO:
ERB	TLW	8E06216	12/11/00	13

Appendix A

BASF RIVERVIEW
MDEQ INVESTIGATION

SURFACE GEOPHYSICAL SURVEYS

Scope and Objectives

Surface geophysical surveys were used as part of the site investigation of the BASF Corporation Riverview site in Riverview, Michigan. These investigations were conducted as part of a remedial investigation and feasibility study related to potential soil and groundwater contamination at the site.

The objective of the geophysical investigation was to further delineate the extent of buried waste materials at the site. Available information indicates that buried materials at site could include foundations and debris from several buildings that were previously located on the property. In addition, during the initial phase of the subsequently terminated site development by Federal Marine Terminals, and the related environmental investigation that followed, numerous 55-gallon steel drums were reportedly encountered at the site.

Two types of geophysical investigation methods, including the electromagnetic EM method and the magnetic method were utilized to accomplish the survey objective. Descriptions of the two geophysical methods are provided below. Descriptions of the survey instrumentation, field methods and results are also provided.

Site Description

The Riverview site is located along the western bank of the Trenton Channel of the Detroit River and is bordered to the west by Jefferson Avenue, to the north by industrial property owned by Material Processing Inc. and to the south by the Township City of Riverview boat slip facility. The site comprises approximately 30-acres of relatively flat grass field. Several rows of recently planted poplar trees buffer the western and southern perimeters of the site.

Geophysical Methods

Electromagnetic Method

The Geonics EM-31 instrument was used to perform the EM survey. The EM method using the Geonics EM-31 provides a rapid means of measuring the electrical conductivity of subsurface materials including soil and rock. EM data can aid the characterization of:

- lateral extent of landfill and/or trench materials;
- buried metallic objects;
- depth and thickness of subsurface units;

- soil and rock units, and lateral variations within the units; and
- lateral extent of paleochannels or former ponds.

The EM method using the EM-31 involves the induction of an electrical current into the earth. A small alternating current is generated by a transmitter coil that transmits a primary, time-varying magnetic field into the ground. Through inductive coupling, the primary magnetic field produces small eddy currents in the subsurface, which in turn create their own secondary magnetic field. A receiver coil measures both the primary and secondary fields. Changes in magnitude and phase of the individual currents are output as voltages and are related to the subsurface electrical conductivity.

The depth of investigation of the EM-31 is dependent on the instrument mode of operation. The EM-31 can be operated in the horizontal and vertical dipole modes, which provide maximum depths of investigation of approximately 7 to 8 feet and 14 to 16 feet, respectively.

The EM-31 measures both the quadrature phase, and inphase components of the induced magnetic field. The quadrature phase is linearly related to the ground conductivity and is therefore particularly responsive to geologic variations. The inphase component reading is the ratio of the induced magnetic field to the primary field, and is more responsive to the presence of metallic objects than the quadrature phase.

Conductivity values for each component of the EM response can be plotted and contoured to evaluate the conductivity variations across the site. Interpretation of an EM contour map requires that the basic characteristics and causes of conductivity anomalies be kept in mind. Electrical conductivity is a function of the soil or rock type, the porosity and the permeability of the rock units, and the nature and extent of fluid filling the pore spaces. Most types of soil and rock are electrical insulators of low conductivity. The electrical conduction that takes place in the subsurface is primarily electrolytic and occurs through the interconnected moisture-filled pores contained in the matrix.

If a conductive body such as a metal drum is placed in the matrix, ion flow and conduction occurs preferentially through the metal, thus increasing the bulk conductivity. Conversely, if non-conductive materials such as unreinforced concrete are placed in the matrix, ion flow and conduction occur around the resistor, thus reducing the bulk conductivity. Therefore, landfill areas, which may have buried metallic objects, process wastes, sludge, or leachate, are generally manifested as conductivity highs, while landfill or hardfill areas, which may have buried concrete, asphalt, wood, or dry backfill soil materials, are generally manifested as conductivity lows. All these facets are superimposed on the geologic framework of the site, which can also produce varying conductivity conditions due to the variable characteristics and thicknesses of the lithologic units.

It should be noted that variations in both the quadrature and inphase readings from some background level are more diagnostic than the absolute values. Variations in conductivity can indicate variations in subsurface conditions. As discussed in the example above, landfill materials can sometimes produce a relative conductivity low (depending on the physical characteristics of the materials). However, landfill materials that include metallic objects such as drums generally produce a relative conductivity high. In some instances the anomaly produced by a metallic object can appear as a dipole which is characterized by both high and low values in close proximity to each other. This occurs because the EM response can be affected by the interaction between the anomaly-producing body in the subsurface and the receiver and transmitter orientation of the instrument.

Variations in the subsurface conductivity resulting from buried metallic objects are generally manifested by relatively large (greater than 25 milliSiemens per meter (mS/m)) anomalies. However, these anomalies, as well as smaller ones, can be masked by the interfering effects of surface debris, buried utilities, overhead utilities, communications equipment, or any large metal structures in close proximity to the survey area.

Magnetic Method

Magnetic methods aid subsurface characterization through measurement of the earth's magnetic field and local variations in the field. For environmental applications, such a survey can be used for detection of buried metallic objects, areas of disturbed soil, or for reconnaissance geologic mapping. A magnetic survey involves the measurement of the earth's magnetic field at various points on the ground surface. Variations in the magnetic susceptibility of subsurface materials produce anomalies within the earth's magnetic field than can be resolved using a magnetometer.

Two types of magnetic measurements that can be obtained include magnetic total field and magnetic vertical gradient. The total field intensity is simply the magnitude of the earth's magnetic field vector. The magnetic vertical gradient is a measurement of the difference in the total magnetic field between two sensors set at different fixed heights above the ground. In general, the total field measurements are most suitable for reconnaissance surveys while gradient measurements allow resolution of more complex anomalies.

Magnetic measurements are affected by several sources that interfere with the desired magnetic signal. However, by using standard surveying techniques the effects of these sources of interference can be removed, or corrected from the magnetics data. Diurnal variations, which are dominated by temporal magnetic variations, are primarily caused by particle and electromagnetic radiation from the sun. These variations are often monitored by either reoccupation of a base station at prescribed time intervals, or by a continuously recording magnetic base station.

Magnetic values (or magnetic gradient values) can be plotted on a map and contoured so that variations over the site can be analyzed. Buried subsurface metal can be indicated by high magnetic values or high vertical gradients. Generally, areas with magnetic anomaly highs indicate buried ferromagnetic materials. Magnetic anomaly lows can indicate disturbed soils with no ferromagnetic constituents. In many cases, a magnetic anomaly will appear as a dipole characterized by both high and low values in close proximity to each other. This occurs because the amplitudes of the magnetic measurements are dependent upon the direction the survey traverse approaches the anomalous magnetic field, and upon the orientation of the anomaly-producing object buried in the subsurface. The magnetic response from a ferromagnetic object of interest is proportional to the mass of the object and inversely proportional to object's depth of burial. Typically, a single drum can be detected to a depth of 10 to 15 feet. Groups of drums can be detected at depths of 25 feet or more.

Need for Two Types of Geophysical Investigation Techniques

As is discussed above, EM surveying using the EM-31 instrument is a very useful method for delineating waste disposal materials and areas of disturbed soils. However, the method is limited to a depth of investigation of approximately 16 feet. The magnetics method is a very useful tool for delineating ferromagnetic objects, such as drums, to depths greater than 16 feet. However, the magnetic survey technique does not provide for delineating non-ferromagnetic waste disposal materials, such as sludge, brine or aluminum containers, and is typically less effective than the EM method for delineating areas of disturbed soil. Therefore, it was necessary to supplement the EM survey with a magnetic survey in order to more completely address the investigation objectives.

Instrumentation and Field Methods

Field Program

URS conducted the geophysical field investigation during the period of July 17 to 22, 2000. Technical staff from the Michigan Department of the Environments consultant, Malcolm Pirnie, were present during the field investigation to provide regulatory oversight of the geophysical program. Staff from the MDE, also visited the site during the geophysical field investigation.

Grid Layout

A site specific surveying coordinate system was established during previous phases of investigation at the site. This coordinate system's origin (Northing = 0 feet, and Easting = 0 feet) is located at the northwest corner of the property. The coordinate system's Y-axis (Northing) runs parallel to the fence line that forms the northern boundary of the site. The X-axis (Easting) runs perpendicular to this fence line.

Prior to commencement of the geophysical investigation, a land surveyor established a base survey grid consisting of wooden lathe placed at 100-foot centers along grid lines Y = 0 feet and Y = -300 feet. The geophysical investigation team supplemented this base grid with PVC pin flags placed at 20-foot centers along lines spaced at 100 feet centers (Y = 0 feet, -100, -200 feet, -300 feet, etc.... to -1,200 feet.

EM Survey

The EM data were collected using a Geonics EM-31 using a data station spacing of 2.5 feet along roughly north-south oriented survey lines spaced 20-feet apart across the entire area of concern. Quadrature and inphase measurements were collected at each data station using the vertical dipole mode. The EM-31 readings were recorded using a data logger that allowed the operator to store and record station coordinate information and EM data simultaneously.

Upon completion of the EM survey, the data were downloaded to a personal computer. The data were then formatted for input to a contouring program. Data plotting and contouring was accomplished using the computer software SURFER. Inputs to the contouring program included the station coordinates, EM readings, a selected spacing for gridding the raw data, and a contour interval. Color enhanced contour maps were generated for both the quadrature and inphase data.

Magnetic Survey

Magnetic total field and vertical gradient data were collected using a GeoMetrics G858G cesium vapor magnetic gradiometer using a data station spacing of 2.5 feet along roughly north-south oriented survey lines spaced 20-feet apart across the entire area of concern. Continuously recorded magnetic base station data were collected using a separate GeoMetrics G856 magnetometer, to facilitate making the diurnal corrections to the data.

Upon completion of the magnetic survey, the data were downloaded to a personal computer. The data were then formatted for input to a contouring program. Data plotting and contouring was accomplished using the computer software SURFER. Inputs to the contouring program included the station coordinates, magnetic readings, a selected spacing for gridding the raw data, and a contour interval. Color enhanced contour maps were generated for both the magnetic total field and vertical gradient data.

Geophysical Investigation Results

The results of the geophysical investigation are depicted in the contour maps included as Figures 1 through 4. Figures 1 and 2 depict the EM quadrature and inphase response results, respectively. Figures 3 and 4 depict the magnetic vertical gradient and magnetic total field results, respectively.

The most prominent anomalies indicated from the EM results (Figures 1 and 2) are apparent as quadrature and inphase response highs that cover large areas located across the central and western portions of the site. These anomalies are believed to represent elevated concentrations of brine in the groundwater in those areas of the site. This interpretation is support by the following observations:

- The magnetics survey results do not appear to indicate corresponding magnetic anomalies in those areas. This indicates that the anomalies do not appear to represent buried ferromagnetic materials.

- The anomalies are indicated by quadrature response (terrain conductivity) values ranging from about 160 mS/m to greater than 320 mS/m. This range is consistent with the range typical of brine.
- The subject group of EM anomalies includes the anomaly located at the northeast corner of the site. This anomaly appears to be confined to the western side of the slurry wall constructed to control brine from migrating off site into the Trenton Channel. Thus, if the interpretation that these anomalies represent brine is correct, then the slurry wall appears to be working effectively.

The EM results indicate several other smaller anomalies that appear to represent observable surface features including fence lines, monitoring well casings, sheet pile walls, utilities and surface debris. These features are also apparent on the contour maps depicting the magnetics survey results (Figures 3 and 4). However, these features as well as several other features that appear to represent buried metal objects are generally better defined by the magnetics survey results due to masking effects associated with the large EM anomalies apparently related to brine.

The magnetics results indicate anomalies located in the southwestern and southern portions of the site that appear to represent the remains of foundations of two buildings formerly located in those areas of the site. The magnetics results also indicate numerous, relatively large anomalies located along the eastern perimeter of the site. These anomalies appear to be associated with blocks of reinforced concrete present along the shoreline of the site.

Numerous additional small anomalies are apparent on the magnetics results maps. Several of these anomalies correlate with the location of rebar and other metal objects associated with the irrigation system at the site. This correlation was confirmed during the detailed site reconnaissance conducted immediately following completion of the geophysical data collection. The magnetics results also indicate several other anomalies that do not appear to correlate with observed surface features. However, these anomalies cover small areas (tens of square feet or less) and are relatively low amplitude. These results indicate that the anomalies indicate small metal objects that are buried near the surface.

No other anomalies that appear to be associated with waste disposal are apparent from the geophysical investigation results. Specifically, no features, such as other large linear, or rectangular shaped anomalies which would typically be characteristic of waste disposal trenches or cells, are apparent from these results. In addition, none of the anomalies appear to indicate the possible presence of large concentrations of buried drums.

Timothy King

08/07/2000 05:33 PM

To: lanigaj@basf-corp.com
cc: Tim Whipple/Cleveland/URSCorp@URSCORP, Keith Mast/Cleveland/URSCorp@URSCORP
Subject: BASF Riverview - Geophysical Anomalies

As per your request, attached is the draft of the Excel file tabulating the geophysical anomalies interpreted from the EM and magnetics surveys at the BASF Riverview site. Based on my review of the geophysical data, I would recommend excavating test pits at the following locations:

1) **Location:** Easting 320 - 340 feet, Northing -560 to -580 feet
Purpose: Investigate grouping of suspected buried metal objects located within capped drainage ditch area

2) **Location:** Easting 380 to 420 feet, Northing -690 to -720 feet
Purpose: Investigate relatively large anomaly indicative of suspected buried metal objects. No surface indications of a possible cause of this anomaly were observed during the site reconnaissance.

3) **Location:** Easting 600 to 760 feet, Northing -20 to -100 feet
Purpose: Investigate grouping of suspected buried metal objects located with the northern capped area

4) **Location:** Easting 620 to 780 feet, Northing -1120 to -1200 feet
Purpose: Investigate grouping of anomalies outside of capped areas. No surface indications of a possible cause of this anomaly were observed during the site reconnaissance.

5) **Location:** Easting 720 to 900 feet, Northing -1200 to -1080 feet
Purpose: Investigate relatively large anomaly. No definitive surface indications of a possible cause of this anomaly were observed during the site reconnaissance.

6) **Location:** Easting 840 to 920 feet, Northing -350 to -500 feet
Purpose: Investigate grouping of relatively large anomalies in filled land area.

However, these recommendations are based solely on my interpretation of the geophysical data. Other issues including utility line avoidance, permitting, existing contaminant distribution information and health and safety considerations as well as concerns over disturbing the various engineered caps, may warrant selection of alternate locations.

Please call me at (301) 670-3309 if you have any questions or require additional information.

Regards,

Tim King

anomalies.x

GEOPHYSICAL ANOMALIES
BASF RIVERVIEW SITE
RIVERVIEW, MICHIGAN

Easting (feet)	Northing (feet)	Description	Interpretation
40 to 1080	-20	Linear EM and Magnetics anomaly	Fence line
40	-460	Small bull's-eye anomaly on vertical gradient map	Metal object observed at surface
60	-65	Small bull's-eye anomaly on vertical gradient map	Metal object observed at surface
60	-140	Small bull's-eye anomaly on vertical gradient map	Metal object observed at surface
60	-310	Small bull's-eye anomaly on vertical gradient map	Metal object observed at surface
40 to 180	-680 to -600	Linear EM and Magnetics anomaly	Fence line
160 to 520	-600 to -1200	Linear EM and Magnetics anomaly	Fence line
80 to 200	-800 to -740	Linear EM and Magnetics anomaly	North end of buried foundation of former building
200 to 360	-740 to -1040	Linear EM and Magnetics anomaly	East end of buried foundation of former building
240 to 360	-1100 to -1040	Linear EM and Magnetics anomaly	South end of buried foundation of former building
240 to 80	-1100 to -800	Linear EM and Magnetics anomaly	West end of buried foundation of former building
160 to 520	-600 to -1200	Linear EM and Magnetics anomaly	Fence line
80	-290	Small bull's-eye anomaly on magnetics maps	Metal object observed at surface
100	-170	Small bull's-eye anomaly on vertical gradient map	Metal object observed at surface
100	-410	Small bull's-eye anomaly on vertical gradient map	Metal object observed at surface
120	-200	Small bull's-eye anomaly on vertical gradient map	Metal object observed at surface
140	-310	Small bull's-eye anomaly on vertical gradient map	Metal object observed at surface
160	-480	Small bull's-eye anomaly on vertical gradient map	Metal object observed at surface
180	-110	Small bull's-eye anomaly on vertical gradient map	Metal object observed at surface
200	-170	Small bull's-eye anomaly on vertical gradient map	Metal object observed at surface
220	-180	Small bull's-eye anomaly on vertical gradient map	Metal object observed at surface
220	-240	Small bull's-eye anomaly on vertical gradient map	Metal object observed at surface

GEOPHYSICAL ANOMALIES
BASF RIVERVIEW SITE
RIVERVIEW, MICHIGAN

Easting (feet)	Northing (feet)	Description	Interpretation
240	-210	Small bull's-eye anomaly on vertical gradient map	Metal object observed at surface
240	-470	Small bull's-eye anomaly on vertical gradient map	Suspected small, near-surface, metal object
240	-550	Small bull's-eye anomaly on vertical gradient map	Metal object observed at surface, located within capped drainage ditch
300	-50	Small EM and magnetics bull's-eye anomaly	Catch basin with metal grate
300	-480	Small bull's-eye anomaly on vertical gradient map	Suspected small, near-surface, metal object
320	-460	Small bull's-eye anomaly on vertical gradient map	Suspected small, near-surface, metal object
320	-500	Small bull's-eye anomaly on vertical gradient map	Suspected small, near-surface, metal object
320 to 340	**-560 to -580**	**Mid-size bull's-eye anomaly on vertical gradient map**	**Suspected buried metal object(s), located within capped drainage ditch**
340	-540	Small bull's-eye anomaly on vertical gradient map	Suspected small, near-surface, metal object(s)
360	-500	Small bull's-eye anomaly on vertical gradient map	Suspected small, near-surface, metal object(s)
360	-520	Small bull's-eye anomaly on vertical gradient map	Suspected small, near-surface, metal object(s)
400	-520	Small bull's-eye anomaly on vertical gradient map	Suspected small, near-surface, metal object(s)
380 to 420	**-690 to -720**	**Larger bull's-eye anomaly on magnetics maps**	**Suspected buried metal object(s)**

GEOPHYSICAL ANOMALIES
BASF RIVERVIEW SITE
RIVERVIEW, MICHIGAN

Easting (feet)	Northing (feet)	Description	Interpretation
420	-370	Small bull's-eye anomaly on vertical gradient map	Suspected buried metal object(s), located within northern capped area
420	-440	Small bull's-eye anomaly on vertical gradient map	Suspected buried metal object(s), located within northern capped area
420	-600	Small bull's-eye anomaly on vertical gradient map	Suspected buried metal object(s), located within capped drainage ditch
440	-560	Small bull's-eye anomaly on vertical gradient map	Suspected buried metal object(s), located within capped drainage ditch
460	-460	Small bull's-eye anomaly on vertical gradient map	Suspected buried metal object(s), located within northern capped area
480	-570	Small bull's-eye anomaly on vertical gradient map	Suspected buried metal object(s), located within capped drainage ditch
480	-860	Small bull's-eye anomaly on vertical gradient map	Suspected buried metal object(s), located within southern capped area
480	-900	Small bull's-eye anomaly on vertical gradient map	Suspected buried metal object(s), located within southern capped area
500	-400	Small bull's-eye anomaly on vertical gradient map	Suspected buried metal object(s), located within northern capped area
500	-480	Small bull's-eye anomaly on vertical gradient map	Suspected buried metal object(s), located within northern capped area
500	-520	Small bull's-eye anomaly on vertical gradient map	Suspected buried metal object(s), located within northern capped area
500	-600	Small bull's-eye anomaly on vertical gradient map	Suspected buried metal object(s), located within capped drainage ditch
500	-640	Small bull's-eye anomaly on vertical gradient map	Suspected buried metal object(s), located within capped drainage ditch

GEOPHYSICAL ANOMALIES
BASF RIVERVIEW SITE
RIVERVIEW, MICHIGAN

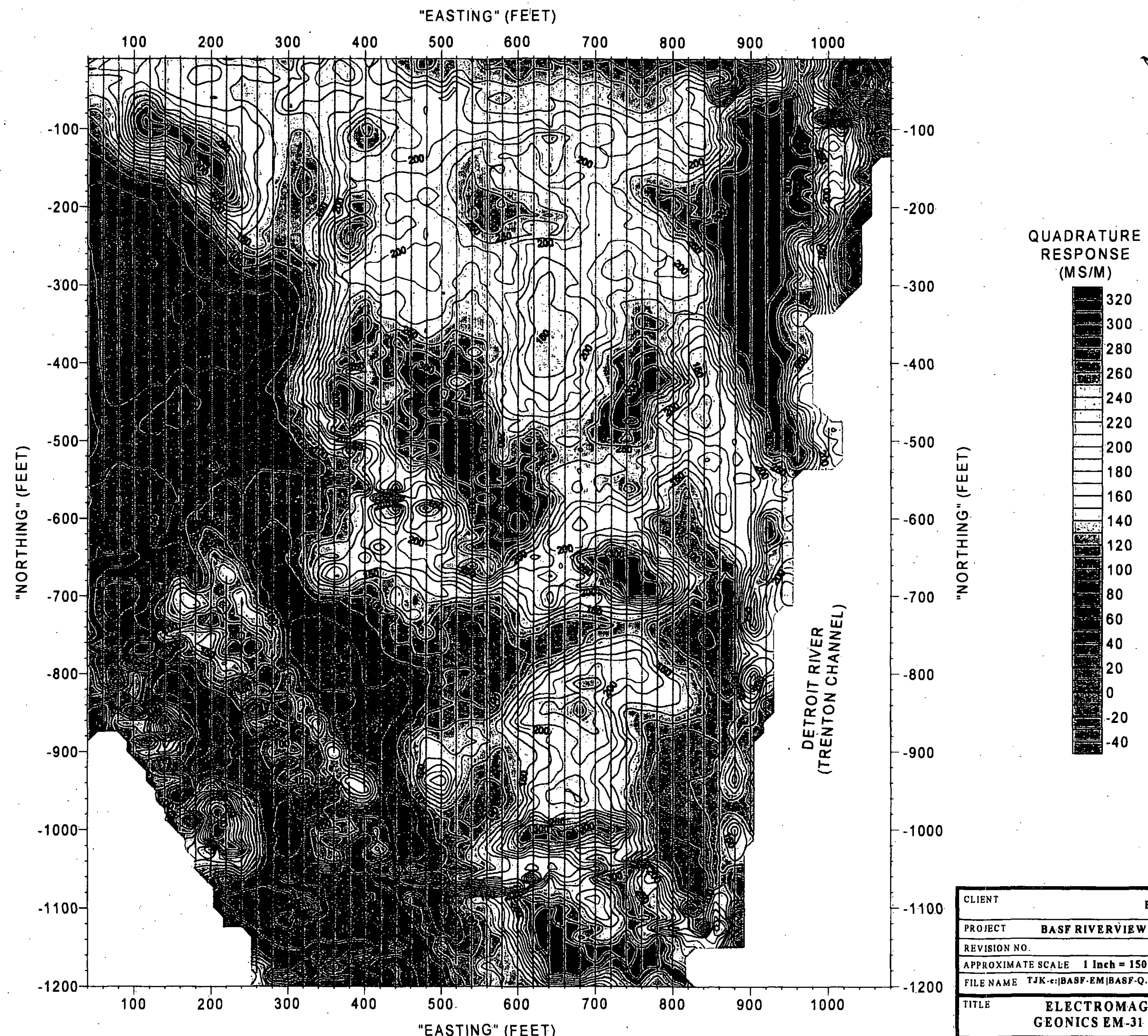
Easting (feet)	Northing (feet)	Description	Interpretation
500 to 780	-1100 to -1050	Linear EM and Magnetics anomaly	North end of buried foundation of former building
780 to 820	-1050 to -1140	Linear EM and Magnetics anomaly	East end of buried foundation of former building
520	-340	Small bull's-eye anomaly on vertical gradient map	Suspected buried metal object(s), located within northern capped area
520	-490	Small bull's-eye anomaly on vertical gradient map	Suspected buried metal object(s), located within northern capped area
520	-550	Small bull's-eye anomaly on vertical gradient map	Suspected buried metal object(s), located within capped drainage ditch
520	-580	Small bull's-eye anomaly on vertical gradient map	Suspected buried metal object(s), located within capped drainage ditch
520	-650	Small bull's-eye anomaly on vertical gradient map	Suspected small, near-surface, metal object(s)
520	-680	Small bull's-eye anomaly on vertical gradient map	Suspected small, near-surface, metal object(s)
540	-540	Small bull's-eye anomaly on vertical gradient map	Suspected small, near-surface, metal object(s)
540	-680	Small bull's-eye anomaly on vertical gradient map	Suspected small, near-surface, metal object(s)
560	-660	Small bull's-eye anomaly on vertical gradient map	Suspected small, near-surface, metal object(s)
560	-800	Small bull's-eye anomaly on vertical gradient map	Suspected small, near-surface, metal object(s)
580	-430	Small bull's-eye anomaly on vertical gradient map	Suspected buried metal object(s), located within northern capped area

GEOPHYSICAL ANOMALIES
BASF RIVERVIEW SITE
RIVERVIEW, MICHIGAN

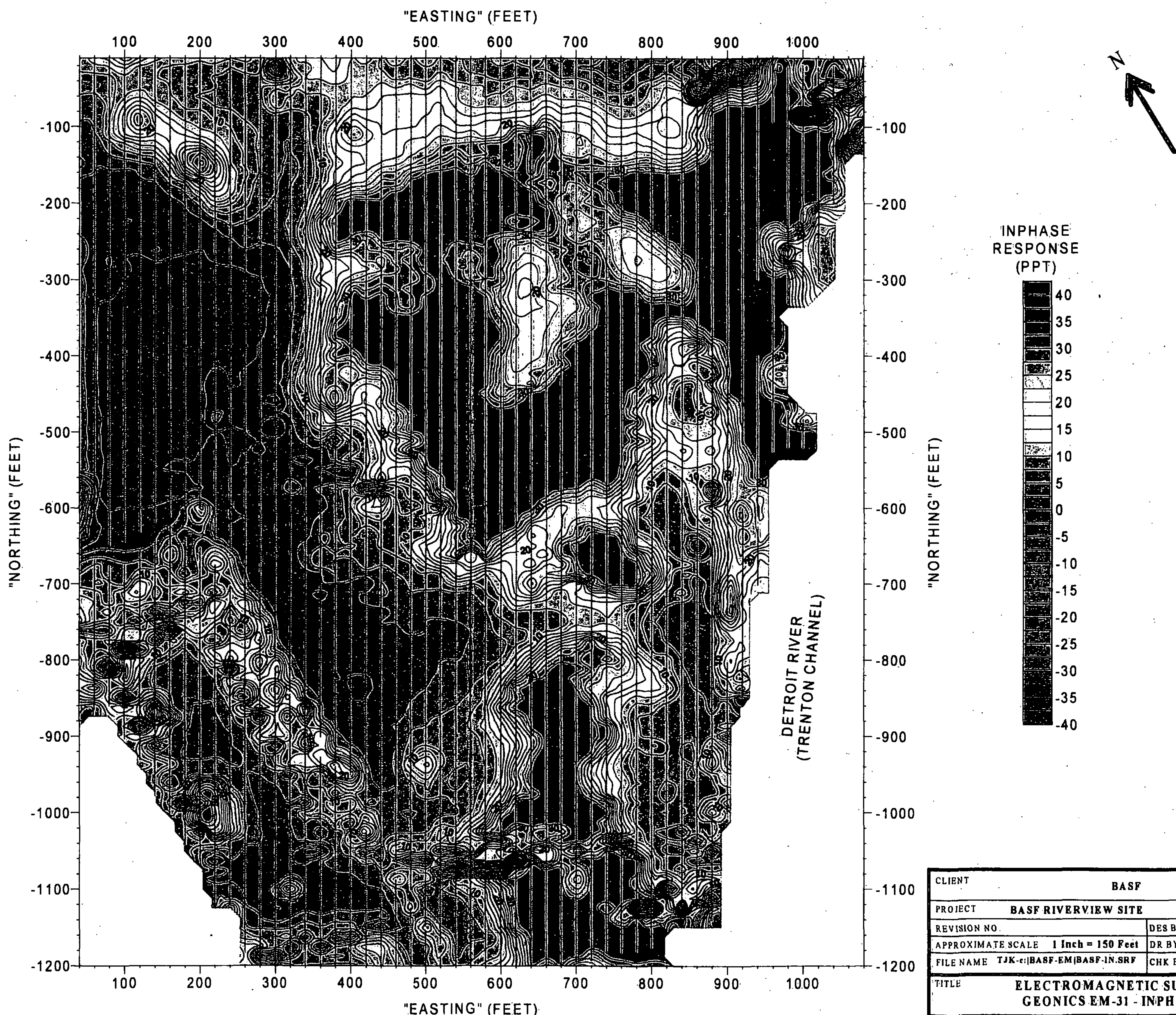
Easting (feet)	Northing (feet)	Description	Interpretation
580	-480	Small bull's-eye anomaly on vertical gradient map	Suspected buried metal object(s), located within northern capped area
580	-540	Small bull's-eye anomaly on vertical gradient map	Suspected buried metal object(s), located within northern capped area
580	-580	Small bull's-eye anomaly on vertical gradient map	Suspected buried metal object(s), located within capped drainage ditch
600	-60	Group of small bull's-eye anomalies on vertical gradient map	Suspected small, buried metal object(s), located within northern capped area
600 to 760	**-20 to -100**	**Small bull's-eye anomaly on vertical gradient map**	**Suspected buried metal object(s), located within northern capped area**
620	-580	Small bull's-eye anomaly on vertical gradient map	Suspected small, buried metal object(s), located within capped drainage ditch
620	-640	Small bull's-eye anomaly on vertical gradient map	Suspected small, buried metal object(s), located within capped drainage ditch
620	-700	Small bull's-eye anomaly on vertical gradient map	Suspected small, near-surface, metal object(s)
620	-980	Small bull's-eye anomaly on vertical gradient map	Suspected small, near-surface, metal object(s)
620 to 700	**-1120 to -1200**	**Group of small bull's-eye anomalies on vertical gradient map**	**Suspected small, near-surface, metal object(s), located in vicinity of former "rock pile"**

GEOPHYSICAL ANOMALIES
BASF RIVERVIEW SITE
RIVERVIEW, MICHIGAN

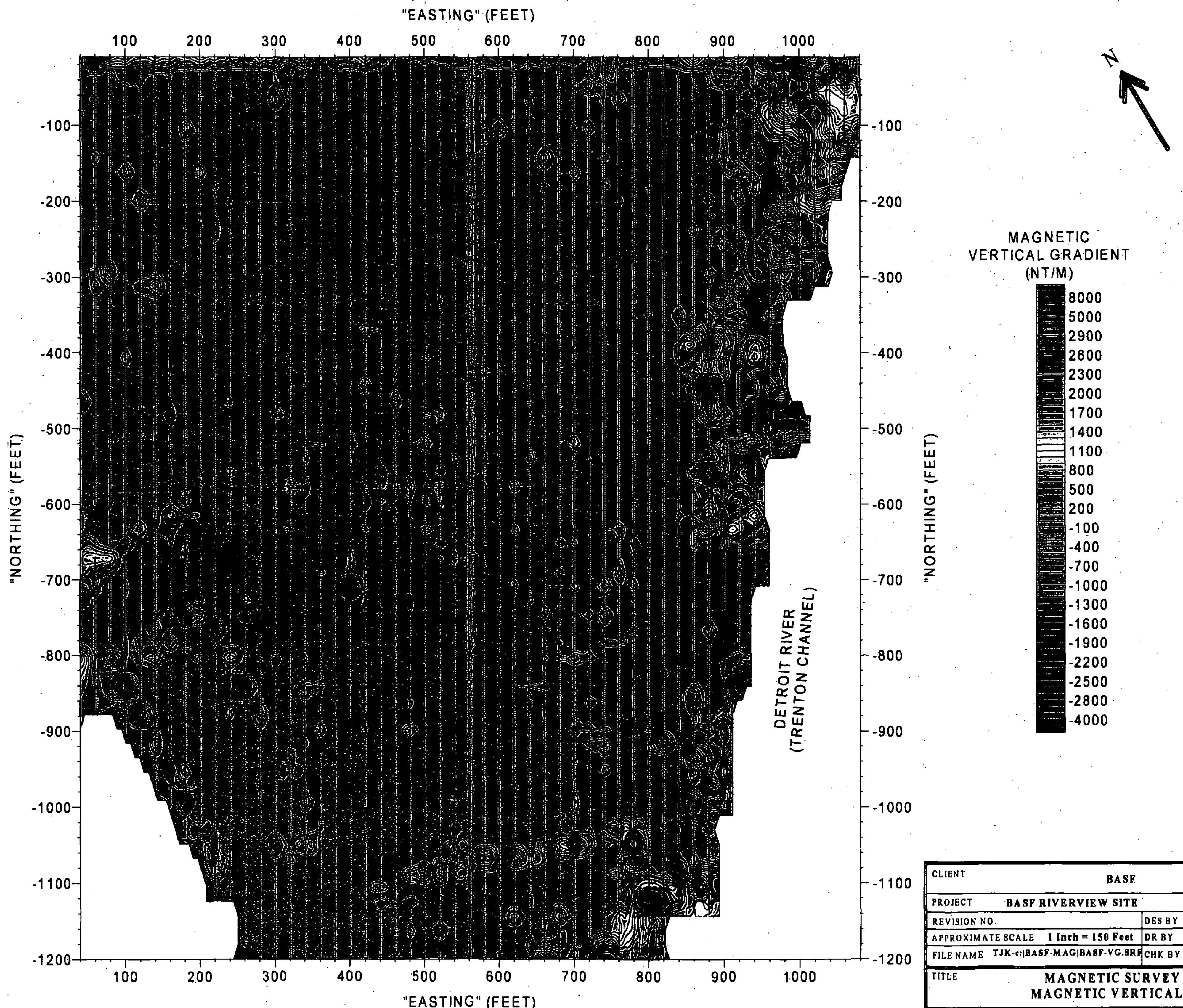
Easting (feet)	Northing (feet)	Description	Interpretation
640 to 780	-640 to -800	Group of small bull's-eye anomalies on vertical gradient map	Suspected buried metal object(s)
720 to 900	**-1200 to -1080**	**Grouping of EM and Magnetics anomalies**	**Suspected buried metal object(s), located in vicinity of steel break wall**
860	-15	Small bull's-eye anomaly on vertical gradient map	Monitoring well DMW-2
920	-250	Small bull's-eye anomaly on vertical gradient map	Monitoring well DMW-6
900 to 980	-80 to-20	Linear EM and Magnetics anomaly	Reinforced concrete lined drainage ditch
840 to 920	**-350 to -500**	**Group of bull's-eye anomalies on magnetics maps**	**Suspected buried metal object(s)**
980 to 1080	-20 to -200	Large EM and magnetics anomalies	Suspected buried metal associated with the slurry wall
860	-860	Small bull's-eye anomaly on vertical gradient map	Monitoring well DMW-4
980	-1000	Small bull's-eye anomaly on vertical gradient map	Monitoring wells DMW-1 and SMW-1
900 to 960	-640 -600	Linear EM and Magnetics anomaly	Reinforced concrete lined drainage ditch
1000	-460 to -500	Large magnetics anomaly	Reinforced concrete slabs located along river shoreline
800 to 1080	-1200 to 0	Grouping of EM and Magnetics anomalies along eastern edge of site	Suspected metal objects including reinforced concrete located along river shoreline
Site-wide	Site-wide	Large EM anomalies characterized by quadrature responses ranging from approximately 180 to greater than 320 milliSiemens per meter	Suspected brine



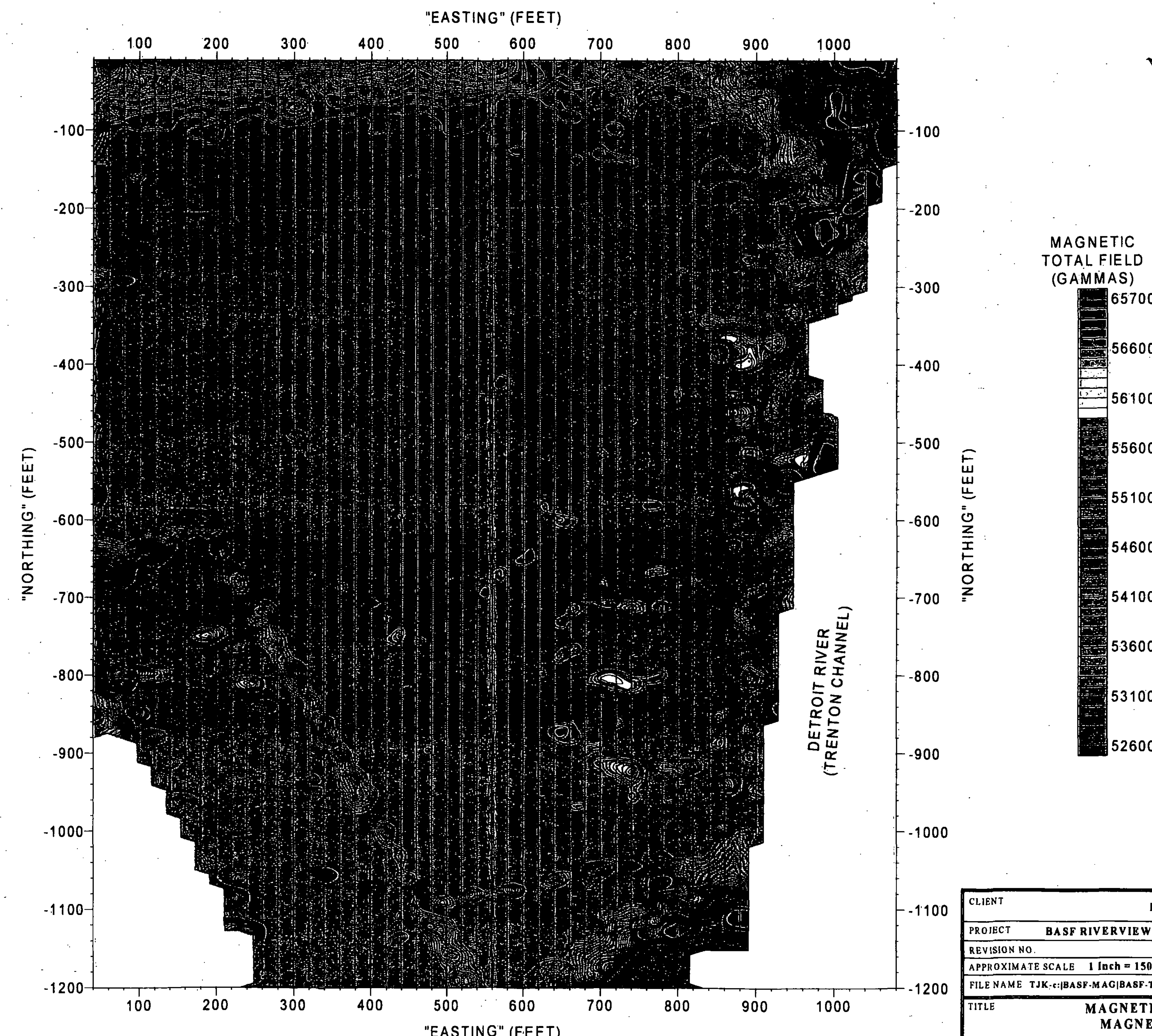
CLIENT	BASF		
PROJECT	BASF RIVERVIEW SITE		
REVISION NO.		DES BY TJK	7/19/00
APPROXIMATE SCALE	1 Inch = 150 Feet	DR BY TJK	7/19/00
FILE NAME	TJK-c:\BASF-EM\BASF-Q.SRF	CHK BY	
TITLE	ELECTROMAGNETIC SURVEY RESULTS GEONICS EM-31 - QUADRATURE RESPONSE		
URS Corporation		PROJ NO	
		FIGURE	1



CLIENT	BASF		
PROJECT	BASF RIVERVIEW SITE		
REVISION NO.		DES BY TJK	7/19/00
APPROXIMATE SCALE	1 Inch = 150 Feet	DR BY TJK	7/19/00
FILE NAME	TJK-c:\BASF-EM\BASF-IN.SRF	CHK BY	
TITLE	ELECTROMAGNETIC SURVEY RESULTS GEONICS EM-31 - INPHASE RESPONSE		
URS Corporation		PROJ NO	
		FIGURE	2



CLIENT BASF			
PROJECT BASF RIVERVIEW SITE			
REVISION NO.	DES BY	TJK	7/20/00
APPROXIMATE SCALE 1 Inch = 150 Feet	DR BY	TJK	7/20/00
FILE NAME TJK-c:\BASF-MAG\BASF-VG.SRF	CHK BY		
TITLE MAGNETIC SURVEY RESULTS MAGNETIC VERTICAL GRADIENT			
URS Corporation	PROJ NO		
	FIGURE 3		



CLIENT	BASF		
PROJECT	BASF RIVERVIEW SITE		
REVISION NO.		DES BY TJK	7/20/00
APPROXIMATE SCALE	1 Inch = 150 Feet	DR BY TJK	7/20/00
FILE NAME	TJK-c:\BASF-MAG\BASF-TF.SRF	CHK BY	
TITLE	MAGNETIC SURVEY RESULTS MAGNETIC TOTAL FIELD		
URS Corporation		PROJ NO	
		FIGURE	4

Appendix B

Project: BASF - Riverview
Project Location: Riverview, Michigan
Project Number: 38-08E06216.04

Key to Log of Boring

Sheet 1 of 1

Elevation feet	Depth, feet	SAMPLES: Type	SAMPLES: Number	SAMPLES: Sampling Resistance, blows / 6 in.	SAMPLES: Recovery, inches	SAMPLES: Headspace PID, ppm	Graphic Log	MATERIAL DESCRIPTION	Well Completion Schematic	FIELD NOTES AND WELL DETAILS
1	2	3	4	5	6	7	8	9	10	11

COLUMN DESCRIPTIONS

1 **Elevation:** Elevation in feet referenced to International Great Lakes Datum (I.G.L.D. = NGVD - 1.42 feet).

2 **Depth:** Depth in feet below the ground surface.

3 **Sample Type:** Type of soil sample collected at depth interval shown; sampler symbols are explained below.

4 **Sample Number:** Sample identification number.

5 **Sampling Resistance:** Number of blows to advance driven sampler each 6-inch drive interval, or distance noted, using a 140-lb hammer with a 30-inch drop; "NA" indicates data not recorded.

6 **Recovery:** Length in inches of sample actually recovered in driven or pushed sampler; "NA" indicates data not recorded.

7 **Headspace PID:** Photo-ionization detector field sample headspace reading in parts per million (ppm). "NA" indicates data not recorded; "--" indicates no reading due to insufficient sample.

8 **Graphic Log:** Graphic depiction of subsurface material encountered; typical symbols are explained below.

9 **Material Description:** Description of material encountered; may include color, moisture, grain size, and density/consistency.

10 **Well Completion Schematic:** Schematic of piezometer or well installation; materials are listed alongside well schematic; graphic symbols are explained below.

11 **Field Notes and Well Details:** Comments and observations regarding drilling or sampling made by driller or field personnel. Well construction materials and installation details are also listed.

TYPICAL SOIL GRAPHIC SYMBOLS

- SAND (SP)
- CLAY (CL)
- SILT (ML)
- GRAVEL (GP)
- Silty SAND (SM)
- Plastic CLAY (CH)
- Clayey SILT (ML)
- Silty River Sediment
- Clayey SAND (SC)
- Silty CLAY (CL/CL-ML)
- Organic Material
- Non-Soil Industrial Fill

TYPICAL WELL GRAPHIC SYMBOLS

- Galvanized steel outer casing
- Blank well casing in bentonite chips
- Blank well casing in cement
- Blank well casing in holeplug
- Blank well casing in cement grout
- Slotted well casing in filter sand

TYPICAL SAMPLER GRAPHIC SYMBOLS

- 2-inch-OD unlined split spoon sampler (SPT)
- Thin-walled tube sampler (Shelby tube)
- 3-inch-OD split spoon sampler (California)
- Grab sample

OTHER GRAPHIC SYMBOLS

- ▽ First water encountered at time of drilling (ATD)
- ▼ Static water level measured in well on specified date
- Change in material properties within a stratum
- ---- Inferred or gradational lithologic contact

GENERAL NOTES

1. Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive; actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
2. Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

Report: ENV_12S/W_SOLON_KEY; File: BASFRIV4.GPJ; 10/3/2000 keypz

URS

Project: BASF - Riverview	Log of Boring SB-1
Project Location: Riverview, Michigan	Sheet 1 of 1
Project Number: 38-08E06216.04	

Date(s) Drilled	7/26/00	Logged By	J. Mielecki	Reviewed By	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	29.5 feet
Drill Rig and Bit	4.25-inch-ID / 8-inch-OD auger	Sampling Method	2-inch-OD and 3-inch-OD split spoon ("*" indicates lab sample)	River Surface Elevation	572.04 feet IGLD
Groundwater Level(s)	Not applicable (drilled in river)	Hammer Data	140 lbs / 30-inch drop	Coordinate Location	S 210.31 E 1103.96
Borehole Backfill	Hole collapse during auger removal	Comments	Drilled off barge in Detroit River; depths are measured from water surface.		

Elevation feet	Depth, feet	SAMPLES: Type / Number	SAMPLES: Sampling Resistance, blows / 6 in.	SAMPLES: Recovery, inches	SAMPLES: Headspace PID, ppm	Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
	0						Water	
570								
	5							
565								
	10							
560								
		S-1*	2-1-1-1	<1	2		Very loose, wet GRAVEL and SAND, trace silt	Sample composited from 13.5-19.5 ft submitted for analysis.
	15	S-2*	1-1-5-3	8	<1		Very loose to loose, wet GRAVEL and SAND with black silty sediment, concrete, cinders	
555		S-3*	3-1-1-1	10	4		←Plastic bag recovered in sample	
	20	S-4	0-0-0-8	<1	–		←Small piece of concrete recovered in sample	
550		S-5	9-5-9-8	12	–		←Concrete, brick, and limestone gravel in sediment	
		S-6	3-1-1-3	15	<1		Very loose, wet, black, silty SAND with gravel, trace concrete	
	25						Soft, wet, grayish black, silty CLAY, trace sand	
		S-7	0-0-0-1	24	<1		Very soft, wet, grayish black, silty sediment	
545		S-8	4-0-1-3	20	<1		Very soft, moist, medium gray, silty CLAY, trace sand ←Thin sand seam (1/16 inch thick)	
	30						**Bottom of boring at 29.5 feet below water surface**	
540								
	35							

URS

Project: BASF - Riverview	Log of Boring SB-2
Project Location: Riverview, Michigan	Sheet 1 of 1
Project Number: 38-08E06216.04	

Date(s) Drilled	7/26/00	Logged By	J. Mielecki	Reviewed By	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	34.5 feet
Drill Rig and Bit	4.25-inch-ID / 8-inch-OD auger	Sampling Method	2-inch-OD and 3-inch-OD split spoon ("*" indicates lab sample)	River Surface Elevation	572.04 feet IGLD
Groundwater Level(s)	Not applicable (drilled in river)	Hammer Data	140 lbs / 30-inch drop	Coordinate Location	S 191.62 E 1152.69
Borehole Backfill	Hole collapse during auger removal	Comments	Drilled off barge in Detroit River; depths are measured from water surface.		

Elevation feet	Depth, feet	SAMPLES: Type Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	MATERIAL DESCRIPTION	FIELD NOTES
	0					Water	
570							
	5						
565							
	10						
560							
	15						
555							
	20						
550							
	25	S-1*	1-0-0-1	NA	2	GRAVEL and SAND with brick and rock fragments Very soft, wet, grayish black, silty sediment	Sample from 24.5-25 ft submitted for analysis.
545		S-2	0-0-0-0	0	–		
		S-3	0-0-0-0	0	–		
	30	S-4	6-1-1-4	24	3	With gravel	
540		S-5	0-0-0-0	15	2	Soft, moist, gray, silty CLAY, trace gravel Becomes very soft, medium gray	
	35					**Bottom of boring at 34.5 feet below water surface**	

Report: ENV_12S/W_CLEV+/-USCS; File: BASFRIV4.GPJ; 1/22/2001 SB-02

Project: BASF - Riverview	Log of Boring SB-4
Project Location: Riverview, Michigan	Sheet 1 of 1
Project Number: 38-08E06216.04	

Date(s) Drilled	7/27/00	Logged By	J. Mielecki	Reviewed By	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	35.0 feet
Drill Rig and Bit	4.25-inch-ID / 8-inch-OD auger	Sampling Method	2-inch-OD split spoon	River Surface Elevation	572.04 feet IGLD
Groundwater Level(s)	Not applicable (drilled in river)	Hammer Data	140 lbs / 30-inch drop	Coordinate Location	S 185.12 E 1244.46
Borehole Backfill	Hole collapse during auger removal	Comments	Drilled off barge in Detroit River; depths are measured from water surface.		

Elevation feet	Depth, feet	SAMPLES: Type Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
	0						Water	
570								
	5							
565								
	10							
560								
	15							
555								
	20							
550								
	25							
545								
	30							
		S-1	0-0-0-0	20	<1		Very soft, wet, grayish black, silty sediment, trace sand	
540							Very soft, moist, gray, silty CLAY, trace gravel	
		S-2	1-3-2-3	24	<1		Becomes medium stiff	
	35						Bottom of boring at 35.0 feet below water surface	

URS

Project: BASF - Riverview **Project Location: Riverview, Michigan** **Project Number: 38-08E06216.04**	**Log of Boring SB-5** Sheet 1 of 1

Date(s) Drilled	7/26/00	Logged By	J. Mielecki	Reviewed By	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	24.5 feet
Drill Rig and Bit	4.25-inch-ID / 8-inch-OD auger	Sampling Method	2-inch-OD split spoon	River Surface Elevation	572.04 feet IGLD
Groundwater Level(s)	Not applicable (drilled in river)	Hammer Data	140 lbs / 30-inch drop	Coordinate Location	S 336.28 E 1020.31
Borehole Backfill	Hole collapse during auger removal	Comments	Drilled off barge in Detroit River; depths are measured from water surface.		

Elevation feet	Depth, feet	SAMPLES: Type	SAMPLES: Number	SAMPLES: Sampling Resistance, blows / 6 in.	SAMPLES: Recovery, inches	SAMPLES: Headspace PID, ppm	Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
	0							Water	
570									
	5		S-1	0-0-0-0	8	<1		Very soft, wet, grayish black, silty sediment	
565			S-2	0-0-0-0	8	<1			
			S-3	0-0-0-0	12	1			
	10		S-4	0-0-0-0	12	<1		Trace clay	
560			S-5	0-0-0-0	18	<1			
	15		S-6	0-0-0-0	20	<1		Sand and gravel seam (1/4 inch thick) Becomes dark gray Becomes grayish black	
555			S-7	0-0-0-0	15	1			
			S-8	0-0-0-0	20	<1		Becomes clayey	
	20		S-9	0-0-0-0	24	<1			
550			S-10	0-0-0-0	10	<1		Very soft, moist, medium gray, silty CLAY, trace sand	
	25							**Bottom of boring at 24.5 feet below water surface**	
545									
	30								
540									
	35								

Report: ENV_12S/W_CLEV+/-USCS; File: BASFRIV4.GPJ; 1/22/2001 SB-05

URS

Project: BASF - Riverview **Project Location: Riverview, Michigan** **Project Number: 38-08E06216.04**	**Log of Boring SB-6** Sheet 1 of 1

Date(s) Drilled	7/26/00	Logged By	J. Mielecki	Reviewed By	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	27.5 feet
Drill Rig and Bit	4.25-inch-ID / 8-inch-OD auger	Sampling Method	2-inch-OD split spoon	River Surface Elevation	572.04 feet IGLD
Groundwater Level(s)	Not applicable (drilled in river)	Hammer Data	140 lbs / 30-inch drop	Coordinate Location	S 348.47 E 1066.60
Borehole Backfill	Hole collapse during auger removal	Comments	Drilled off barge in Detroit River; depths are measured from water surface.		

Elevation feet	Depth, feet	SAMPLES: Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	MATERIAL DESCRIPTION	FIELD NOTES
	0					Water	
570							
	5						
565							
		S-1	0-0-0-0	8	<1	Very soft, wet, black to grayish black, silty sediment	
	10	S-2	0-0-0-0	8	<1	Becomes black, with trace sand	
560		S-3	0-0-0-0	12	<1	Trace clay, no sand	
		S-4	0-0-0-0	14	1		
	15	S-5	0-0-0-0	20	6		
555		S-6	0-0-0-0	18	<1		
	20	S-7	0-0-0-0	22	2		
550		S-8	0-0-0-2	22	<1	Trace gravel	
		S-9	0-0-0-0	22	<1		
	25	S-10	0-0-0-0	20	<1	Very soft, moist, medium gray, silty CLAY, trace gravel Becomes light to medium gray	
545						Bottom of boring at 27.5 feet below water surface	
	30						
540							
	35						

Report: ENV_12S/W_CLEV+/-USCS; File: BASFRIV4.GPJ; 1/22/2001 SB-06

URS

Project: BASF - Riverview	Log of Boring SB-9
Project Location: Riverview, Michigan	Sheet 1 of 1
Project Number: 38-08E06216.04	

Date(s) Drilled	7/26/00	Logged By	J. Mielecki	Reviewed By	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	13.5 feet
Drill Rig and Bit	4.25-inch-ID / 8-inch-OD auger	Sampling Method	2-inch-OD split spoon ("*" indicates lab sample)	River Surface Elevation	572.04 feet IGLD
Groundwater Level(s)	Not applicable (drilled in river)	Hammer Data	140 lbs / 30-inch drop	Coordinate Location	S 617.08 E 1010.35
Borehole Backfill	Hole collapse during auger removal	Comments	Drilled off barge in Detroit River; depths are measured from water surface.		

Elevation feet	Depth, feet	SAMPLES Type	Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
	0							Water	
570									
			S-1*	0-2-5-25	6	<1		Loose, wet GRAVEL with sand, clay, silt, sediment, and concrete [FILL]	Sample composited from 3.5-8.5 ft (one 8-oz jar) submitted for analysis.
	5		S-2*	6-3-2-3	6	<1		Loose, wet GRAVEL and SAND with black silty sediment [FILL]	
565			S-3*	2-1-3-2	12	<1			
								Medium stiff, moist, medium gray and brown mottled, silty CLAY	
	10		S-4	7-7-8-14	0	--			
								Stiff to very stiff, moist, brown, silty CLAY with gravel	
560			S-5	7-8-10-13	18	<1			
								Bottom of boring at 13.5 feet below water surface	
	15								
555									
	20								
550									
	25								
545									
	30								
540									
	35								

Report: ENV_12S/W_CLEV+/-USCS; File: BASFRIV4.GPJ; 1/22/2001 SB-09

Project: BASF - Riverview
Project Location: Riverview, Michigan
Project Number: 38-08E06216.04

Log of Boring SB-10

Date(s) Drilled	7/26/00	Logged By	J. Mielecki	Reviewed By	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	20.0 feet
Drill Rig and Bit	4.25-inch-ID / 8-inch-OD auger	Sampling Method	2-inch-OD split spoon ("*" indicates lab sample)	River Surface Elevation	572.04 feet IGLD
Groundwater Level(s)	Not applicable (drilled in river)	Hammer Data	140 lbs / 30-inch drop	Coordinate Location	S 528.95 E 1051.77
Borehole Backfill	Hole collapse during auger removal	Comments	Drilled off barge in Detroit River; depths are measured from water surface.		

Elevation feet	Depth, feet	SAMPLES: Type	SAMPLES: Number	SAMPLES: Sampling Resistance, blows / 6 in.	SAMPLES: Recovery, inches	SAMPLES: Headspace PID, ppm	Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
	0							Water	
570									
	5								
565									
	10		S-1	0-0-0-0	<1	--		Very soft, wet, black, silty sediment	
560			S-2	0-0-0-0	14	<1		Trace sand	
			S-3	0-0-0-0	24	<1			
	15								
555			S-4	0-1-2-2	15	<1		Grayish black, silty CLAY, white substance, trace fibrous material, sand, sediment Soft, moist, medium gray, silty CLAY, trace gravel	Sample from 16-18 ft (one 8-oz jar) submitted for analysis.
			S-5	2-2-3-3	20	<1		Becomes medium stiff, with no gravel	
	20							**Bottom of boring at 20.0 feet below water surface**	
550									
	25								
545									
	30								
540									
	35								

Report: ENV_12S/W_CLEV+/-USCS; File: BASFRIV4.GPJ; 1/22/2001 SB-10

URS

Project: BASF - Riverview	Log of Boring SB-11
Project Location: Riverview, Michigan	Sheet 1 of 1
Project Number: 38-08E06216.04	

Date(s) Drilled	7/26/00	Logged By	J. Mielecki	Reviewed By	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	29.0 feet
Drill Rig and Bit	4.25-inch-ID / 8-inch-OD auger	Sampling Method	2-inch-OD split spoon	River Surface Elevation	572.04 feet IGLD
Groundwater Level(s)	Not applicable (drilled in river)	Hammer Data	140 lbs / 30-inch drop	Coordinate Location	S 574.01 E 1099.69
Borehole Backfill	Hole collapse during auger removal	Comments	Drilled off barge in Detroit River; depths are measured from water surface.		

Elevation feet	Depth, feet	SAMPLES: Type Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
	0						Water	
570								
	5							
565								
	10							
560								
	15	S-1	0-0-0-0	6	2		Very soft, wet, grayish black, silty sediment	
555		S-2	0-0-0-0	10	<1		Trace sand	
		S-3	0-0-0-0	13	<1		Becomes blackish gray, with no sand	
	20	S-4	0-0-0-0	22	2		Trace clay	
550		S-5	0-0-0-0	10	<1			
	25	S-6	0-0-0-0	24	<1			
545		S-7	0-0-1-2	24	<1		Very soft, moist, medium gray CLAY, trace gravel Wet, black sand seam (1/4 inch thick)	
	30						Bottom of boring at 29.0 feet below water surface	
540								
	35							

Report: ENV_12S/W_CLEV+/-USCS; File: BASFRIV4.GPJ; 1/22/2001 SB-11

URS

Project: BASF - Riverview Project Location: Riverview, Michigan Project Number: 38-08E06216.04	Log of Boring SB-12 Sheet 1 of 1

Date(s) Drilled	7/26/00	Logged By	J. Mielecki	Reviewed By	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	33.0 feet
Drill Rig and Bit	4.25-inch-ID / 8-inch-OD auger	Sampling Method	2-inch-OD split spoon	River Surface Elevation	572.04 feet IGLD
Groundwater Level(s)	Not applicable (drilled in river)	Hammer Data	140 lbs / 30-inch drop	Coordinate Location	S 570.76 E 1149.23
Borehole Backfill	Hole collapse during auger removal	Comments	Drilled off barge in Detroit River; depths are measured from water surface.		

Elevation feet	Depth, feet	SAMPLES: Type Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
	0						Water	
570								
	5							
565								
	10							
560								
	15							
555								
	20							
550								
		S-1	0-0-0-0	8	<1		Very soft, wet, blackish gray, silty sediment	
	25	S-2	0-0-0-0	14	<1			
545		S-3	0-0-0-0	20	<1		Becomes black	
							Trace gravel	
		S-4	0-0-0-0	24	<1		Very soft, moist, dark gray, silty CLAY, trace gravel	
	30							
540		S-5	0-0-0-0	20	<1		Becomes medium gray, with trace sand, no gravel	
							Bottom of boring at 33.0 feet below water surface	
	35							

Report: ENV_12S/W_CLEV+/-USCS; File: BASFRIV4.GPJ; 1/22/2001 SB-12

URS

Project: BASF - Riverview	Log of Boring SB-13
Project Location: Riverview, Michigan	Sheet 1 of 1
Project Number: 38-08E06216.04	

Date(s) Drilled	7/25/00	Logged By	J. Mielecki	Reviewed By	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	13.0 feet
Drill Rig and Bit	4.25-inch-ID / 8-inch-OD auger	Sampling Method	2-inch-OD split spoon	River Surface Elevation	572.04 feet IGLD
Groundwater Level(s)	Not applicable (drilled in river)	Hammer Data	140 lbs / 30-inch drop	Coordinate Location	S 883.65 E 984.36
Borehole Backfill	Hole collapse during auger removal	Comments	Drilled off barge in Detroit River; depths are measured from water surface.		

Elevation feet	Depth, feet	SAMPLES Type	Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
	0							Water	
570									
			S-1	0-0-0-0	8	<1		Very soft, wet, black to grayish black, silty sediment	
	5		S-2	0-0-0-0	12	<1			
565			S-3	0-0-0-0	14	<1		Becomes black	
			S-4	0-0-0-0	20	<1			
	10							Very soft, moist, green and gray mottled CLAY, trace gravel	
			S-5	3-6-10-14	18	<1		Stiff to very stiff, moist, brown and gray mottled CLAY, trace gravel	
560									
								Bottom of boring at 13.0 feet below water surface	
	15								
555									
	20								
550									
	25								
545									
	30								
540									
	35								

Report: ENV_12S/W_CLEV+/-USCS; File: BASFRIV4.GPJ; 1/22/2001 SB-13

URS

Project: BASF - Riverview **Project Location:** Riverview, Michigan **Project Number:** 38-08E06216.04	**Log of Boring SB-14** Sheet 1 of 1

Date(s) Drilled	7/25/00	Logged By	J. Mielecki	Reviewed By	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	21.5 feet
Drill Rig and Bit	4.25-inch-ID / 8-inch-OD auger	Sampling Method	2-inch-OD split spoon	River Surface Elevation	572.04 feet IGLD
Groundwater Level(s)	Not applicable (drilled in river)	Hammer Data	140 lbs / 30-inch drop	Coordinate Location	S 867.40 E 1029.84
Borehole Backfill	Hole collapse during auger removal	Comments	Drilled off barge in Detroit River; depths are measured from water surface.		

Elevation feet	Depth, feet	SAMPLES: Type Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
	0						Water	
570								
	5							
		S-1	0-0-0-0	8	<1		Very soft, wet, grayish black, silty sediment	
565								
		S-2	0-0-0-0	20	<1			
	10	S-3	NA	24	<1			
560		S-4	NA	18	<1			
		S-5	NA	24	<1			
	15							
		S-6	0-2-1-2	24	<1		← Thin gravel layer	
555							Soft, moist, grayish green CLAY, trace gravel	
		S-7	2-3-5-4	0	–		← Sampler pushed rock	
							Soft, moist, gray, silty CLAY	
	20	S-8	1-1-1-2	22	<1			
550							**Bottom of boring at 21.5 feet below water surface**	
	25							
545								
	30							
540								
	35							

Report: ENV_12S/W_CLEV+/-USCS; File: BASFRIV4.GPJ; 1/22/2001 SB-14

URS

Project: BASF - Riverview **Project Location: Riverview, Michigan** **Project Number: 38-08E06216.04**	# Log of Boring SB-15 Sheet 1 of 1

Date(s) Drilled	**7/25/00**	Logged By	**J. Mielecki**	Reviewed By	**J. Anderson**
Drilling Method	**Hollow-stem auger (CME 750X)**	Drilling Contractor	**Stearns Drilling (B. Grahm)**	Total Depth of Borehole	**23.0 feet**
Drill Rig and Bit	**4.25-inch-ID / 8-inch-OD auger**	Sampling Method	**2-inch-OD split spoon**	River Surface Elevation	**572.04 feet IGLD**
Groundwater Level(s)	**Not applicable (drilled in river)**	Hammer Data	**140 lbs / 30-inch drop**	Coordinate Location	**S 900.72 E 1069.64**
Borehole Backfill	**Hole collapse during auger removal**	Comments	**Drilled off barge in Detroit River; depths are measured from water surface.**		

Elevation feet	Depth, feet	SAMPLES: Type	SAMPLES: Number	SAMPLES: Sampling Resistance, blows / 6 in.	SAMPLES: Recovery, inches	SAMPLES: Headspace PID, ppm	Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
	0							Water	
570									
	5								
565									
	10								
560									
	15		S-1	0-0-0-0	18	<1		Very soft, wet, black and gray, silty sediment, trace clay	
555			S-2	0-0-0-0	20	<1		Trace sand, no clay	
			S-3	0-0-2-1	14	<1		No sand	
	20								
			S-4	3-1-1-1	18	<1		Soft, moist, gray, silty CLAY Trace gravel	
550									
								Bottom of boring at 23.0 feet below water surface	
	25								
545									
	30								
540									
	35								

Project: BASF - Riverview Project Location: Riverview, Michigan Project Number: 38-08E06216.04	**Log of Boring SB-16** Sheet 1 of 1

Date(s) Drilled	7/25/00	Logged By	J. Mielecki	Reviewed By	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	28.5 feet
Drill Rig and Bit	4.25-inch-ID / 8-inch-OD auger	Sampling Method	2-inch-OD split spoon	River Surface Elevation	572.04 feet IGLD
Groundwater Level(s)	Not applicable (drilled in river)	Hammer Data	140 lbs / 30-inch drop	Coordinate Location	S 885.28 E 1120.80
Borehole Backfill	Hole collapse during auger removal	Comments	Drilled off barge in Detroit River; depths are measured from water surface.		

Elevation feet	Depth, feet	SAMPLES: Type	Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
	0							Water	
570									
	5								
565									
	10								
560									
	15								
555									
	20								
550									
	25		S-1	0-0-0-0	10	<1		Very soft, wet, light gray, silty CLAY, trace gravel	
545			S-2	0-0-0-0	24	<1			
								Bottom of boring at 28.5 feet below water surface	
	30								
540									
	35								

Report: ENV_12S/W_CLEV+/-USCS; File: BASFRIV4.GPJ; 1/22/2001 SB-16

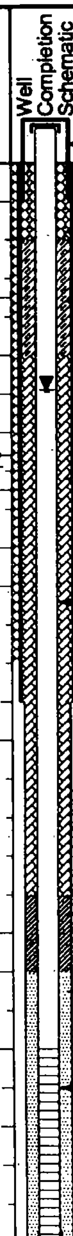
URS

Project: BASF - Riverview Project Location: Riverview, Michigan Project Number: 38-08E06216.04	**Log of Boring DMW-9** Sheet 1 of 1

Date(s) Drilled and Installed	7/27/00 through 8/2/00	Geologist	J. Mielecki	Reviewer	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X, 8-in. OD to 28 ft, 12.25-in. OD to 13 ft)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	28.0 feet
Sampling Method	3-inch-OD split spoon ("*" indicates lab sample)	Hammer Data	140 lbs / 30-inch drop	Top of Casing Elevation	579.16 feet IGLD
Size and Type of Well Casing	10-inch-ID galvanized steel 0-14 ft; 2-inch-ID PVC +2 ft to 23 ft bgs	Screen Perforation	0.010-inch slot (wire wound) 23-28 ft	Surface Elevation	577.07 feet IGLD
Seal or Backfill	Cement 0-2 ft, bentonite chips 2-5 ft, cement grout 5-19 ft; holeplug 19-21 ft	Groundwater Level(s)	7.9 feet BGS on 7/28/00 ATD; 7.99 feet BTOC on 9/5/00	Coordinate Location	S 733.17 E 894.80

Elevation feet	Depth, feet	Type	Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	Graphic Log	MATERIAL DESCRIPTION
	0		S-1	9-19-20-17	18	<1		Very stiff to hard, dry, tan SILT, trace sand and gravel [CAP MATERIAL]
575			S-2*	9-10-13-12	20	<1		Very stiff to hard; dry, tan to brown SILT with sand, brick, and cinders [FILL] Light tan brick fragment Becomes dark gray, with brick, no sand or cinders
	5		S-3	8-25-50/0"	4	5		Moist, white DBO [FILL] With yellow brick and cinders
570			S-4*	8-4-2-2	18	49		Medium stiff, wet, black SILT with cinders, industrial slag, and gravel [FILL] Medium stiff, wet, black SILT with organics [PEAT] Soft, moist, dark gray, silty CLAY
			S-5	2-2-4-2	20	2		Soft, moist, dark gray, clayey SILT, trace sand and vegetation
	10		S-6*	0-0-2-2	24	<1		Very soft, moist, dark gray, silty CLAY, trace vegetation
565			S-7	2-5-6-8	24	<1		Stiff, moist, gray CLAY, trace silt and gravel Becomes brown and gray mottled
	15		S-8	2-4-9-12	8	<1		Medium stiff to stiff, moist, gray and brown mottled, silty CLAY, trace gravel
			S-9	6-16-25-30	22	1		Becomes very stiff, brown
560			S-10	8-15-25-28	24	<1		Becomes hard, brown with trace gray mottles
	20		S-11	4-7-12-16	24	<1		Becomes medium stiff to stiff, gray and brown mottled
555			S-12	2-4-5-6	24	<1		Stiff, moist, gray CLAY Becomes medium stiff, brown
			S-13	2-4-6-8	8	--		Medium stiff, moist, gray, silty CLAY, plastic, trace gravel Medium stiff, moist, gray CLAY, trace gravel
550	25		S-14*	0-2-3-4	24	<1		Very soft to soft, moist, gray, silty CLAY, trace gravel
	30							Bottom of boring at 28.0 feet

Well Completion Schematic



FIELD NOTES AND WELL DETAILS
- 4-inch square steel protective casing
- 12.25-in.-dia. borehole (0-13 ft)
- Cement (0-2 ft)
- Bentonite chips (2-5 ft)
- 10-in.-ID steel outer casing to 14 ft
- Cement grout (5-19 ft)
- **Stop drilling at 10 ft on 7/27/00. Resume on 7/28/00.**
- 2-in.-ID PVC riser (+2 ft to 23 ft bgs)
- Outer steel casing pushed 1 ft past overdrilled hole and grouted in place
- **Grout 10-in. casing, then stop on 7/28/00. Resume on 8/2/00.**
- 8-in.-dia. borehole (13-28 ft)
- Holeplug (19-21 ft)
- #7 silica sand (21-28 ft)
- 0.010-in. slot PVC screen, spiral wire wound (23-28 ft)
- **Install well on 8/2/00.**

Report: ENV_12SW_CLEV+/-USCS; File: BASFRIV4.GPJ; 10/3/2000 DMW-09

Project: BASF - Riverview	Log of Boring DMW-10
Project Location: Riverview, Michigan	Sheet 1 of 1
Project Number: 38-08E06216.04	

Date(s) Drilled and Installed	7/31/00 through 8/2/00	Geologist	J. Mielecki	Reviewer	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X, 8-in. OD to 26 ft, 12.25-in. OD to 13 ft)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	26.0 feet
Sampling Method	2-inch-OD and 3-inch-OD split spoon ("*" indicates lab sample)	Hammer Data	140 lbs / 30-inch drop	Top of Casing Elevation	577.66 feet IGLD
Size and Type of Well Casing	10-inch-ID galvanized steel 0-14 ft; 2-inch-ID PVC +2 ft to 21 ft bgs	Screen Perforation	0.010-inch slot (wire wound) 21-26 ft	Surface Elevation	575.67 feet IGLD
Seal or Backfill	Cement 0-3 ft, bentonite chips 3-5 ft, cement grout 5-17 ft; holeplug 17-19 ft	Groundwater Level(s)	4 feet BGS on 7/31/00 ATD; 24.50 feet BTOC on 9/5/00	Coordinate Location	S 388.76 E 923.12

Elevation feet	Depth, feet	Samples: Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	MATERIAL DESCRIPTION	FIELD NOTES AND WELL DETAILS
	0						4-inch square steel protective casing
575		S-1	2-5-10-14	22	<1	Medium stiff, moist, brown CLAY	12.25-in.-dia. borehole (0-13 ft)
						Moist, dark brown to black, industrial fill: cinders, concrete, and gravel [FILL]	Cement (0-3 ft)
		S-2*	13-13-18-8	24	<1	Medium stiff to stiff, moist, gray and brown mottled CLAY [FILL]	
						Moist, brown and black, industrial fill, trace gravel [FILL]	
						Medium dense, moist, light brown, silty SAND [FILL]	
						Moist, industrial fill, including concrete [FILL]	Bentonite chips (3-5 ft)
		S-3	5-8-5-31	2	<1	Becomes wet, with black cinders and silt	
570	5						
		S-4	3-2-1-1	3	<1	Soft, wet, black, silty CLAY with concrete [FILL]	10-in.-ID steel outer casing to 14 ft
		S-5*	2-2-2-3	15	<1	Very soft to soft, wet, black PEAT, trace plastic clay, vegetation, and wood [PEAT]	Cement grout (5-17 ft)
						Very soft to soft, wet, medium gray, silty CLAY, trace vegetation	
565	10	S-6*	1-3-5-7	24	<1	Becomes medium stiff, with trace brown mottles; plastic bag recovered in sample	2-in.-ID PVC riser (+2 ft to 21 ft bgs)
		S-7	1-3-5-7	NA	<1	Becomes moist, medium stiff to stiff	**Grout 10-in. casing, then stop on 7/31/00. Resume on 8/2/00.**
		S-8	8-10-10-13	0	–	Stiff to very stiff, moist, gray CLAY, trace brown mottles and vegetation (roots)	Outer steel casing pushed 1 ft past overdrilled hole and grouted in place
560	15					Very stiff, moist, grayish brown, silty CLAY, trace gravel	
		S-9	3-5-10-11	24	<1		8-in.-dia. borehole (13-26 ft)
		S-10	3-5-7-8	24	<1	Medium stiff to stiff, moist, grayish brown CLAY, trace gravel	Holeplug (17-19 ft)
555	20	S-11	4-5-6-7	10	<1	Medium stiff to stiff, moist, medium gray, silty CLAY, trace gravel	#7 silica sand (19-26 ft)
		S-12	3-4-4-5	24	<1	Becomes soft to medium stiff, gray	0.010-in. slot PVC screen, spiral wire wound (21-26 ft)
550	25	S-13*	1-2-2-3	24	<1	Becomes soft	
						Bottom of boring at 26.0 feet	**Install well on 8/2/00.**
	30						

Report: ENV_12S/W_CLEV+/-USCS; File: BASFRIV4.GPJ; 10/3/2000 DMW-10

URS

Project: BASF - Riverview
Project Location: Riverview, Michigan
Project Number: 38-08E06216.04

Log of Boring DMW-11

Sheet 1 of 1

Date(s) Drilled and Installed	7/28/00 through 8/3/00	Geologist	J. Mielecki	Reviewer	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X, 8-in. OD to 26 ft, 12.25-in. OD to 11 ft)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	26.0 feet
Sampling Method	2-inch-OD and 3-inch-OD split spoon ("*" indicates lab sample)	Hammer Data	140 lbs / 30-inch drop	Top of Casing Elevation	577.62 feet IGLD
Size and Type of Well Casing	10-inch-ID galvanized steel 0-12 ft; 2-inch-ID PVC +2 ft to 21 ft bgs	Screen Perforation	0.010-inch slot (wire wound) 21-26 ft	Surface Elevation	575.77 feet IGLD
Seal or Backfill	Cement 0-3 ft, bentonite chips 3-5 ft, cement grout 5-17 ft; holeplug 17-19 ft	Groundwater Level(s)	12 feet BGS on 8/2/00 ATD; 25.04 feet BTOC on 9/5/00	Coordinate Location	S 57.27 E 945.66

Elevation, feet	Depth, feet	SAMPLES: Number	SAMPLES: Sampling Resistance, blows / 6 in.	SAMPLES: Recovery, inches	SAMPLES: Headspace PID, ppm	MATERIAL DESCRIPTION	FIELD NOTES AND WELL DETAILS
	0						4-inch square steel protective casing
575		S-1	11-27-50/2"	14	<1	Very stiff to hard, dry, tan, silty CLAY with sand, gravel, and slag; surficial vegetation	12.25-in.-dia. borehole (0-11 ft); Cement (0-3 ft)
		S-2	3-6-6-5	24	<1	Moist, white DBO [FILL]	Bentonite chips (3-5 ft)
		S-3*	5-9-11-6	20	<1		Stop drilling at 4 ft on 7/28/00. Resume on 7/31/00.
	5					Medium dense, moist, black GRAVEL with sand, cinders, and industrial fill [FILL]	
570		S-4*	3-4-5-4	10	<1	Soft to medium stiff, moist, black, silty PEAT with wood, trace gravel and vegetation (roots) [PEAT]	10-in.-ID steel outer casing to 12 ft; Cement grout (5-17 ft)
		S-5	1-1-1-3	18	1	Very soft, moist, gray CLAY, plastic, with vegetation (roots)	2-in.-ID PVC riser (+2 ft to 21 ft bgs)
565	10	S-6	2-3-4-5	24	<1	Soft to medium stiff, moist, gray, silty CLAY, high plasticity, with vegetation (roots)	Grout 10-in. casing, then stop on 7/31/00. Resume on 8/2/00.
		S-7	12-14-14-13	12	<1	Medium dense, wet, black SAND	Outer steel casing pushed 1 ft past overdrilled hole and grouted in place
						Very stiff, moist, grayish brown CLAY, trace gravel	
		S-8	4-7-8-11	18	<1	Becomes stiff to very stiff, gray and brown mottled	
560	15						8-in.-dia. borehole (11-26 ft)
		S-9	3-7-9-11	24	<1	Very stiff, moist, gray, silty CLAY, trace gravel	Holeplug (17-19 ft)
		S-10	2-5-7-9	20	<1	Becomes stiff	Stop drilling at 18 ft on 8/2/00. Resume on 8/3/00.
555	20	S-11	5-6-9-8	0	--	No gravel	#7 silica sand (19-26 ft)
		S-12	2-4-4-4	8	<1	Becomes medium stiff, with trace gravel	0.010-in. slot PVC screen, spiral wire wound (21-26 ft)
		S-13	2-2-4-6	20	<1	Becomes soft	
550	25						
						Bottom of boring at 26.0 feet	Install well on 8/3/00.
	30						

Report: ENV_12SW_CLEV+/-USCS; File: BASFRIV4.GPJ; 10/3/2000 DMW-11

Project: BASF - Riverview	Log of Boring DMW-12
Project Location: Riverview, Michigan	Sheet 1 of 1
Project Number: 38-08E06216.04	

Date(s) Drilled and Installed	8/1/00 through 8/3/00	Geologist	J. Mielecki	Reviewer	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X, 8-in. OD to 30 ft, 12.25-in. OD to 21.5 ft)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	30.0 feet
Sampling Method	2-inch-OD and 3-inch-OD split spoon ("*" indicates lab sample)	Hammer Data	140 lbs / 30-inch drop	Top of Casing Elevation	584.06 feet IGLD
Size and Type of Well Casing	10-inch-ID galvanized steel 1-22 ft; 2-inch-ID PVC +2 ft to 25 ft bgs	Screen Perforation	0.010-inch slot (wire wound) 25-30 ft	Surface Elevation	582.17 feet IGLD
Seal or Backfill	Cement 0-3 ft, bentonite chips 3-5 ft, cement grout 5-21 ft; holeplug 21-23 ft	Groundwater Level(s)	7 feet BGS on 8/1/00 ATD; 29.88 feet BTOC on 9/5/00	Coordinate Location	S 883.85 E 688.11

Elevation feet	Depth, feet	SAMPLES: Type / Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	MATERIAL DESCRIPTION	FIELD NOTES AND WELL DETAILS
	0	S-1	2-4-6-7	24	<1	Medium stiff to stiff, moist, dark brown, clayey SILT with vegetation Stiff, moist, light brown, silty CLAY, trace gravel [CAP MATERIAL]	4-inch square steel protective casing 12.25-in.-dia. borehole (0-21.5 ft)
580		S-2	5-9-9-17	24	<1	Stiff, moist, medium brown and gray mottled CLAY [FILL]	Cement (0-3 ft)
	5	S-3*	57-25-50/0"	12	<1	Dry to moist, tan, sandy CLAY with gravel, trace cobbles [FILL]	Bentonite chips (3-5 ft)
575		S-4	6-4-3-5	12	<1	Soft to medium stiff, moist, gray SILT with gravel, DBO, and brick [FILL] Becomes wet	10-in.-ID steel outer casing grouted in place 1-22 ft
		S-5*	1-2-4-4	14	<1	Soft, wet, light gray, silty CLAY with DBO, paper, wood, and vegetation [FILL]	
	10	S-6*	6-11-9-8	20	<1	With gravel Stiff, moist, black SILT with gravel, brick, paper, and fibrous material [FILL]	Cement grout (5-21 ft)
570		S-7	3-3-3-4	15	<1	Soft, moist, black, organic sandy CLAY with peat, trace vegetation [PEAT]	2-in.-ID PVC riser (+2 ft to 25 ft bgs)
		S-8	3-3-3-6	0	–		
	15	S-9	4-6-5-10	3	<1	Soft to medium stiff, wet, black, organic silty CLAY with peat, vegetation, trace gravel [PEAT]	
565		S-10*	5-8-8-8	18	<1	Soft to medium stiff, wet, black PEAT [PEAT] Medium stiff to stiff, moist, gray and brown mottled CLAY	
	20	S-11	3-5-7-12	24	<1	Becomes stiff to very stiff, with trace gravel	Stop at 22 ft on 8/1/00; ream hole and grout 10-in. casing. Resume on 8/3/00.
560		S-12	3-5-7-9	24	<1	Stiff to very stiff, moist, brown, silty CLAY, trace gravel Becomes medium stiff, gray	Holeplug (21-23 ft)
	25	S-13	2-3-5-6	24	<1		8-in.-dia. borehole (21.5-30 ft)
		S-14	2-3-5-5	20	<1	Becomes soft, with trace coarse gravel to cobbles	#7 silica sand (23-30 ft)
555		S-15*	3-4-5-6	18	<1		0.010-in. slot PVC screen, spiral wire wound (25-30 ft)
	30					Bottom of boring at 30.0 feet	Install well on 8/3/00.

URS

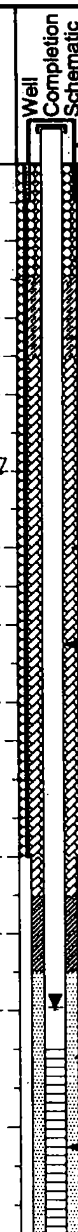
Report: ENV_12S/W_CLEV+/-USCS; File: BASFRIV4.GPJ; 10/3/2000 DMW-12

Project: BASF - Riverview
Project Location: Riverview, Michigan
Project Number: 38-08E06216.04

Log of Boring DMW-13

Date(s) Drilled and Installed	8/1/00 through 8/3/00	Geologist	J. Mielecki	Reviewer	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X, 8-in. OD to 28 ft, 12.25-in. OD to 18 ft)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	28.0 feet
Sampling Method	2-inch-OD and 3-inch-OD split spoon ("*" indicates lab sample)	Hammer Data	140 lbs / 30-inch drop	Top of Casing Elevation	583.08 feet IGLD
Size and Type of Well Casing	10-inch-ID galvanized steel 0-18 ft; 2-inch-ID PVC +2 ft to 23 ft bgs	Screen Perforation	0.010-inch slot (wire wound) 23-28 ft	Surface Elevation	581.17 feet IGLD
Seal or Backfill	Cement 0-3 ft, bentonite chips 3-5 ft, cement grout 5-19 ft; holeplug 19-21 ft	Groundwater Level(s)	8 feet BGS on 8/1/00 ATD; 23.83 feet BTOC on 9/5/00	Coordinate Location	S 263.27 E 623.95

Elevation feet	Depth, feet	Sample Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	MATERIAL DESCRIPTION
	0	S-1	2-4-10-10	22	<1	Medium stiff, moist, dark brown SILT [CAP MATERIAL]
580						Becomes stiff, brown, with trace clay and gravel
		S-2	8-13-13-12	20	<1	Very stiff, moist, medium brown, clayey SILT, trace gravel and roots [CAP MATERIAL]
						Brown, with cinders, glass, brick, and other fill material
		S-3*	8-13-14-30	24	<1	Very stiff, moist, medium brown, silty CLAY [CAP MATERIAL]
	5					Very stiff, moist, dark brown CLAY, trace gravel, brick, and concrete [FILL]
575		S-4*	8-7-7-11	18	<1	Medium stiff to stiff, moist to wet, dark brown to black, silty CLAY with cinders and fill material, trace gravel and DBO [FILL]
		S-5	12-7-3-5	0	--	Becomes wet
	10	S-6*	12-7-5-9	12	<1	Stiff, wet, black SILT with wood [FILL]
570						Loose, wet, black and gray, silty SAND with clay, trace vegetation [PEAT]
		S-7	9-7-6-5	1	<1	Stiff, wet, black SILT with wood and vegetation [PEAT]
		S-8	9-4-4-6	18	<1	Medium stiff, moist, gray, silty CLAY, little root material, trace gravel and brown mottles
	15					
565		S-9	5-5-7-10	<1	<1	With wood
		S-10	6-12-20-34	24	<1	Very stiff, moist, brown and gray mottled CLAY, trace gravel
	20	S-11	3-8-13-16	24	<1	Very stiff, moist, brown to brownish gray, silty CLAY with gravel
560						
		S-12	3-6-9-7	24	<1	Stiff, moist, gray, silty CLAY, trace gravel
		S-13	1-2-3-5	20	<1	Becomes soft to medium stiff
	25					
555		S-14*	0-0-3-3	24	<1	Becomes very soft to soft
						Bottom of boring at 28.0 feet
	30					



FIELD NOTES AND WELL DETAILS

- 4-inch square steel protective casing
- 12.25-in.-dia. borehole (0-18 ft)
- Cement (0-3 ft)
- Bentonite chips (3-5 ft)
- 10-in.-ID steel outer casing to 14 ft grouted in place
- Cement grout (5-19 ft)
- 2-in.-ID PVC riser (+2 ft to 23 ft bgs)
- **Stop at 20 ft on 8/1/00; ream hole and grout 10-in. casing. Resume on 8/3/00.**
- Holeplug (19-21 ft)
- 8-in.-dia. borehole (18-28 ft)
- #7 silica sand (21-28 ft)
- 0.010-in. slot PVC screen, spiral wire wound (23-28 ft)
- **Install well on 8/3/00.**

Project: BASF - Riverview Project Location: Riverview, Michigan Project Number: 38-08E06216.04	**Log of Boring IMW-1** Sheet 1 of 1

Date(s) Drilled and Installed	8/7/00	Geologist	J. Mielecki	Reviewer	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X, 4.25-inch-ID / 8-inch OD auger)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	14.0 feet
Sampling Method	2-inch-OD split spoon ("*" indicates lab sample)	Hammer Data	140 lbs / 30-inch drop	Top of Casing Elevation	579.62 feet IGLD
Size and Type of Well Casing	2-inch-ID PVC +2 ft to 9 ft bgs	Screen Perforation	0.010-inch slot (wire wound) 9-14 ft	Surface Elevation	577.57 feet IGLD
Seal or Backfill	Cement 0-3 ft, bentonite chips 3-7 ft	Groundwater Level(s)	6 feet BGS during drilling; 7.22 feet BTOC on 9/5/00	Coordinate Location	S 1127.77 E 849.56

Elevation feet	Depth, feet	SAMPLES Type Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	Graphic Log	MATERIAL DESCRIPTION	Well Completion Schematic	FIELD NOTES AND WELL DETAILS
									4-inch square steel protective casing
	0	S-1	4-5-9-8	20	<1		Stiff, moist, brown, silty CLAY, trace sand [TOPSOIL]		8-in.-dia. borehole
							Stiff, moist, brown to light brown, silty CLAY, trace gravel, slag, and cinders [FILL]		
575		S-2*	3-4-7-10	12	<1				Cement (0-3 ft)
							Medium dense, moist, light brown SAND with gravel [FILL]		
		S-3	3-3-4-6	12	<1		Medium stiff, moist, black, silty CLAY with gravel [FILL]		Bentonite chips (3-7 ft)
	5						Medium stiff to stiff, moist, light brown CLAY with gravel, trace wood, reworked [FILL]		
		S-4*	2-0-1-1	10	<1		Very soft, wet, black, sandy CLAY with vegetation [PEAT]		2-in.-ID PVC riser (+2 ft to 9 ft bgs)
570									
		S-5	1-1-1-1	18	<1		Soft, wet, light brown, silty CLAY, trace sand		#7 silica sand (7-14 ft)
	10	S-6	1-1-1-1	18	<1				
							Becomes gray, with trace gravel; no sand		0.010-in. slot PVC screen, spiral wire wound (9-14 ft)
565		S-7	1-1-3-4	20	<1		Soft to medium stiff, moist, brown and gray mottled CLAY, trace gravel		
							Bottom of boring at 14.0 feet		
	15								
560									
	20								
555									
	25								
550									
	30								

Report: ENV_12S/W_CLEV+/-USCS; File: BASFRIV4.GPJ; 10/3/2000 IMW-01

URS

Log of Boring IMW-5

Sheet 1 of 1

Project: BASF - Riverview
Project Location: Riverview, Michigan
Project Number: 38-08E06216.04

Date(s) Drilled and Installed	8/8/00	Geologist	J. Mielecki	Reviewer	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X, 4.25-inch-ID / 8-inch OD auger)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	13.0 feet
Sampling Method	2-inch-OD and 3-inch-OD split spoon ("*" indicates lab sample)	Hammer Data	140 lbs / 30-inch drop	Top of Casing Elevation	577.79 feet IGLD
Size and Type of Well Casing	2-inch-ID PVC +2 ft to 8 ft bgs	Screen Perforation	0.010-inch slot (wire wound) 8-13 ft	Surface Elevation	575.77 feet IGLD
Seal or Backfill	Cement 0-3 ft, bentonite chips 3-6 ft	Groundwater Level(s)	4 feet BGS during drilling; 5.28 feet BTOC on 9/5/00	Coordinate Location	S 509.18 E 914.96

Elevation feet	Depth, feet	SAMPLES Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	MATERIAL DESCRIPTION
575	0	S-1	3-10-8-6	24	<1	Stiff, moist, brown, silty CLAY with vegetation [TOPSOIL]
						Very stiff, moist, industrial fill with silt, gravel, cinders, brick [FILL]
		S-2*	5-7-9-26	20	<1	Stiff, moist to wet, black SILT with gravel and wood [FILL]
						Stiff, moist to wet, bluish green CLAY, trace gravel and cobbles [FILL]
	5	S-3*	5-21-15-5	10	<1	Very stiff, wet, black SILT with sand and gravel, trace brick [FILL]
570		S-4	0-1-0-1	0	–	
		S-5	0-1-1-1	0	–	Soft, wet, green CLAY, trace gravel
565	10	S-6	1-1-1-1	12	<1	
						Bottom of boring at 13.0 feet
560	15					
555	20					
550	25					
	30					

FIELD NOTES AND WELL DETAILS (Well Completion Schematic)

- 4-inch square steel protective casing
- 8-in.-dia. borehole
- Cement (0-3 ft)
- Bentonite chips (3-6 ft)
- 2-in.-ID PVC riser (+2 ft to 8 ft bgs)
- #7 silica sand (6-13 ft)
- 0.010-in. slot PVC screen, spiral wire wound (8-13 ft)

URS

Project: BASF - Riverview	Log of Boring IMW-6
Project Location: Riverview, Michigan	Sheet 1 of 1
Project Number: 38-08E06216.04	

Date(s) Drilled and Installed	8/8/00	Geologist	J. Mielecki	Reviewer	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X, 4.25-inch-ID / 8-inch OD auger)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	12.0 feet
Sampling Method	2-inch-OD split spoon ("*" indicates lab sample)	Hammer Data	140 lbs / 30-inch drop	Top of Casing Elevation	577.50 feet IGLD
Size and Type of Well Casing	2-inch-ID PVC +2 ft to 7 ft bgs	Screen Perforation	0.010-inch slot (wire wound) 7-12 ft	Surface Elevation	575.57 feet IGLD
Seal or Backfill	Cement 0-3 ft, bentonite chips 3-5 ft	Groundwater Level(s)	3 feet BGS during drilling; 3.75 feet BTOC on 9/5/00	Coordinate Location	S 252.18 E 938.87

Elevation feet	Depth, feet	SAMPLES: Type	SAMPLES: Number	SAMPLES: Sampling Resistance, blows / 6 in.	SAMPLES: Recovery, inches	SAMPLES: Headspace PID, ppm	MATERIAL DESCRIPTION	FIELD NOTES AND WELL DETAILS
								4-inch square steel protective casing
575	0		S-1	5-5-9-10	20	<1	Stiff, moist, dark brown CLAY with vegetation [TOPSOIL]	8-in.-dia. borehole
							Stiff, moist, brown, silty CLAY with sand, gravel, and cinders [FILL]	
			S-2*	13-7-7-7	20	<1	Medium dense, moist, tan SAND with gravel [FILL]	Cement (0-3 ft)
							Becomes wet	
			S-3	7-9-12-14	6	<1	Increasing gravel, some cobble-size concrete pieces	Bentonite chips (3-5 ft)
570	5							2-in.-ID PVC riser (+2 ft to 7 ft bgs)
			S-4*	3-1-1-1	18	<1	Very loose, wet, black SILT and SAND with cinders [FILL]	
							Soft, wet, black, silty CLAY with vegetation [PEAT]	
			S-5	2-1-1-1	<1	–	Soft, wet, gray CLAY	#7 silica sand (5-12 ft)
565	10		S-6	0-1-1-1	18	<1	Becomes moist, with trace sand and gravel	0.010-in. slot PVC screen, spiral wire wound (7-12 ft)
							Bottom of boring at 12.0 feet	
560	15							
555	20							
550	25							
	30							

Graphic Log

Well Completion Schematic

Report: ENV_12S/W_CLEV+/-USCS; File: BASFRIV4.GPJ; 10/3/2000 IMW-06

Project: BASF - Riverview **Project Location:** Riverview, Michigan **Project Number:** 38-08E06216.04	**Log of Boring IMW-9** Sheet 1 of 1

Date(s) Drilled and Installed	8/2/00	Geologist	J. Mieleckl	Reviewer	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X, 4.25-inch-ID / 8-inch OD auger)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	13.0 feet
Sampling Method	No samples collected	Hammer Data	Not applicable	Top of Casing Elevation	579.12 feet IGLD
Size and Type of Well Casing	2-inch-ID PVC +2 ft to 8 ft bgs	Screen Perforation	0.010-inch slot (wire wound) 8-13 ft	Surface Elevation	577.07 feet IGLD
Seal or Backfill	Cement 0-3 ft, bentonite chips 3-6 ft	Groundwater Level(s)	Not measured during drilling; 6.56 feet BTOC on 9/5/00	Coordinate Location	S 725.90 E 896.07

Elevation feet	Depth, feet	SAMPLES: Type	Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES AND WELL DETAILS
								[IMW-9 was straight-drilled next to DMW-9. Lithology recorded below is copied from Log of Boring DMW-9 and is assumed to be generally representative of subsurface conditions at IMW-9.]	4-inch square steel protective casing
	0							Very stiff to hard, dry, tan SILT, trace sand and gravel [CAP MATERIAL]	8-in.-dia. borehole
575								Very stiff to hard, dry, tan to brown SILT with sand, brick, and cinders [FILL] Becomes dark gray, with brick, no sand or cinders	Cement (0-3 ft)
	5							Moist, white DBO [FILL] With yellow brick and cinders	Bentonite chips (3-6 ft)
570								Medium stiff, wet, black SILT with cinders, industrial slag, and gravel [FILL]	2-in.-ID PVC riser (+2 ft to 8 ft bgs)
								Medium stiff, wet, black SILT with organics [PEAT]	
								Soft, moist, dark gray, silty CLAY	
								Soft, moist, dark gray, clayey SILT, trace sand and vegetation	#7 silica sand (6-13 ft)
	10							Very soft, moist, dark gray, silty CLAY, trace vegetation	
565								Stiff, moist, gray CLAY, trace silt and gravel	0.010-in. slot PVC screen, spiral wire wound (8-13 ft)
								Bottom of boring at 13.0 feet	
	15								
560									
	20								
555									
	25								
550									
	30								

Well Completion Schematic

URS

Report: ENV_12S/W_CLEV+/-USCS; File: BASFRIV4.GPJ; 10/3/2000 IMW-09

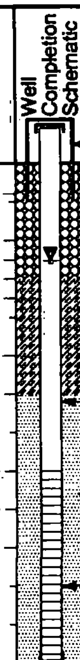
Project: BASF - Riverview **Project Location: Riverview, Michigan** **Project Number: 38-08E06216.04**	**Log of Boring IMW-10** Sheet 1 of 1

Date(s) Drilled and Installed	8/2/00	Geologist	J. Mielecki	Reviewer	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X, 4.25-inch-ID / 8-inch OD auger)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	13.0 feet
Sampling Method	No samples collected	Hammer Data	Not applicable	Top of Casing Elevation	577.70 feet IGLD
Size and Type of Well Casing	2-inch-ID PVC +2 ft to 8 ft bgs	Screen Perforation	0.010-inch slot (wire wound) 8-13 ft	Surface Elevation	575.67 feet IGLD
Seal or Backfill	Cement 0-3 ft, bentonite chips 3-6 ft	Groundwater Level(s)	Not measured during drilling; 4.56 feet BTOC on 9/5/00	Coordinate Location	S 383.72 E 923.44

MATERIAL DESCRIPTION

[IMW-10 was straight-drilled next to DMW-10. Lithology recorded below is copied from Log of Boring DMW-10 and is assumed to be generally representative of subsurface conditions at IMW-10.]

Elevation feet	Depth, feet	SAMPLES: Type	Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	Graphic Log	MATERIAL DESCRIPTION	Well Completion Schematic	FIELD NOTES AND WELL DETAILS
	0							Medium stiff, moist, brown CLAY		4-inch square steel protective casing; 8-in.-dia. borehole
575								Moist, dark brown to black, industrial fill: cinders, concrete, and gravel [FILL]		
								Medium stiff to stiff, moist, gray and brown mottled CLAY [FILL]		Cement (0-3 ft)
								Moist, brown and black, industrial fill, trace gravel [FILL]		
								Medium dense, moist, light brown, silty SAND [FILL]		
								Moist to wet, industrial fill with silt, black cinders, and concrete [FILL]		Bentonite chips (3-6 ft)
570	5									
								Soft, wet, black, silty CLAY with concrete [FILL]		2-in.-ID PVC riser (+2 ft to 8 ft bgs)
								Very soft to soft, wet, black PEAT, trace plastic clay, vegetation, and wood [PEAT]		#7 silica sand (6-13 ft)
								Very soft to soft, wet, medium gray, silty CLAY, trace vegetation		
565	10							Becomes medium stiff, with trace brown mottles		0.010-in. slot PVC screen, spiral wire wound (8-13 ft)
								Becomes moist, medium stiff to stiff		
								Bottom of boring at 13.0 feet		
560	15									
555	20									
550	25									
	30									



Report: ENV_12S/W_CLEV+/-USCS; File: BASFRIV4.GPJ; 10/3/2000 IMW-10

URS

Project: BASF - Riverview **Project Location: Riverview, Michigan** **Project Number: 38-08E06216.04**	**Log of Boring IMW-11** Sheet 1 of 1

Date(s) Drilled and Installed	8/3/00	Geologist	J. Mielecki	Reviewer	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X, 4.25-inch-ID / 8-inch OD auger)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	11.0 feet
Sampling Method	No samples collected	Hammer Data	Not applicable	Top of Casing Elevation	577.69 feet IGLD
Size and Type of Well Casing	2-inch-ID PVC +2 ft to 6 ft bgs	Screen Perforation	0.010-inch slot (wire wound) 6-11 ft	Surface Elevation	575.77 feet IGLD
Seal or Backfill	Cement 0-3 ft, bentonite chips 3-5 ft	Groundwater Level(s)	Not measured during drilling; 3.90 feet BTOC on 9/5/00	Coordinate Location	S 53.06 E 946.15

MATERIAL DESCRIPTION

[IMW-11 was straight-drilled next to DMW-11. Lithology recorded below is copied from Log of Boring DMW-11 and is assumed to be generally representative of subsurface conditions at IMW-11.]

Elevation, feet	Depth, feet	Material Description	Field Notes and Well Details
	0	Very stiff to hard, dry, tan, silty CLAY with sand, gravel, and slag; surficial vegetation	4-inch square steel protective casing; 8-in.-dia. borehole
575		Moist, white DBO [FILL]	Cement (0-3 ft)
			Bentonite chips (3-5 ft)
	5	Medium dense, moist, black GRAVEL with sand, cinders, and industrial fill [FILL]	
570		Soft to medium stiff, moist, black, silty PEAT with wood, trace gravel and vegetation (roots) [PEAT]	2-in.-ID PVC riser (+2 ft to 6 ft bgs)
		Very soft, moist, gray CLAY, plastic, with vegetation (roots)	#7 silica sand (5-11 ft)
	10	Soft to medium stiff, moist, gray, silty CLAY, high plasticity, with vegetation (roots)	0.010-in. slot PVC screen, spiral wire wound (6-11 ft)
565		Bottom of boring at 11.0 feet	
560	15		
555	20		
550	25		
	30		

Columns not used: SAMPLES (Type, Number, Sampling Resistance, blows / 6 in., Recovery, inches, Headspace PID, ppm), Graphic Log, Well Completion Schematic.

URS

Project: BASF - Riverview
Project Location: Riverview, Michigan
Project Number: 38-08E06216.04

Log of Boring IMW-12

Date(s) Drilled and Installed	8/3/00	Geologist	J. Mielecki	Reviewer	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X, 4.25-inch-ID / 8-inch OD auger)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	17.0 feet
Sampling Method	No samples collected	Hammer Data	Not applicable	Top of Casing Elevation	584.16 feet IGLD
Size and Type of Well Casing	2-inch-ID PVC +2 ft to 12 ft bgs	Screen Perforation	0.010-inch slot (wire wound) 12-17 ft	Surface Elevation	582.17 feet IGLD
Seal or Backfill	Cement 0-8 ft, bentonite chips 8-10 ft	Groundwater Level(s)	Not measured during drilling; 11.15 feet BTOC on 9/5/00	Coordinate Location	S 889.82 E 688.60

MATERIAL DESCRIPTION

[IMW-12 was straight-drilled next to DMW-12. Lithology recorded below is copied from Log of Boring DMW-12 and is assumed to be generally representative of subsurface conditions at IMW-12.]

Elevation, feet	Depth, feet	SAMPLES: Type Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	Graphic Log	MATERIAL DESCRIPTION	Well Completion Schematic	FIELD NOTES AND WELL DETAILS
	0						Medium stiff to stiff, moist, dark brown, clayey SILT with vegetation		4-inch square steel protective casing; 8-in.-dia. borehole
							Stiff, moist, light brown, silty CLAY, trace gravel [CAP MATERIAL]		
580							Stiff, moist, medium brown and gray mottled CLAY [FILL]		Cement (0-8 ft)
	5						Dry to moist, tan, sandy CLAY with gravel, trace cobbles [FILL]		2-in.-ID PVC riser (to 12 ft bgs with 2-ft stick-up)
575							Soft to medium stiff, moist to wet, gray SILT with gravel, DBO, and brick [FILL]		
							Soft, wet, light gray, silty CLAY with DBO, paper, wood, and vegetation [FILL]		Bentonite chips (8-10 ft)
	10						With gravel		
							Stiff, moist, black SILT with gravel, brick, paper, and fibrous material [FILL]		#7 silica sand (10-17 ft)
570							Soft, moist, black, organic sandy CLAY with peat, trace vegetation [PEAT]		
	15						Soft to medium stiff, wet, black, organic silty CLAY with peat, vegetation, trace gravel [PEAT]		0.010-in. slot PVC screen, spiral wire wound (12-17 ft)
565							**Bottom of boring at 17.0 feet**		
	20								
560									
	25								
555									
	30								

Project: BASF - Riverview Project Location: Riverview, Michigan Project Number: 38-08E06216.04	Log of Boring IMW-13 Sheet 1 of 1

Date(s) Drilled and Installed	8/3/00	Geologist	J. Mielecki	Reviewer	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X, 4.25-inch-ID / 8-inch OD auger)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	17.0 feet
Sampling Method	3-inch-OD split spoon	Hammer Data	140 lbs / 30-inch drop	Top of Casing Elevation	583.09 feet IGLD
Size and Type of Well Casing	2-inch-ID PVC +2 ft to 12 ft bgs	Screen Perforation	0.010-inch slot (wire wound) 12-17 ft	Surface Elevation	581.07 feet IGLD
Seal or Backfill	Cement 0-8 ft, bentonite chips 8-10 ft	Groundwater Level(s)	Not measured during drilling; 8.94 feet BTOC on 9/5/00	Coordinate Location	S 258.67 E 624.14

Elevation feet	Depth, feet	SAMPLES: Type	Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	MATERIAL DESCRIPTION	FIELD NOTES AND WELL DETAILS
							[IMW-13 was straight-drilled next to DMW-13. Lithology recorded below is copied from Log of Boring DMW-13 and is assumed to be generally representative of subsurface conditions at IMW-13.]	4-inch square steel protective casing
	0						Medium stiff, moist, dark brown SILT [CAP MATERIAL]	8-in.-dia. borehole
580							Becomes stiff, brown, with trace clay and gravel	
							Very stiff, moist, medium brown, clayey SILT, trace gravel and roots [CAP MATERIAL]	Cement (0-8 ft)
							Becomes brown, with fill material	
	5		S-1	5-7-17-28	24	<1	Very stiff, moist, dark brown and gray CLAY with gravel and brick pieces [FILL]	2-in.-ID PVC riser (to 12 ft bgs with 2-ft stick-up)
575							Medium stiff to stiff, moist to wet, dark brown to black, silty CLAY with cinders and fill material, trace gravel and DBO [FILL]	
							Becomes wet	Bentonite chips (8-10 ft)
	10						Stiff, wet, black SILT with wood [FILL]	
570							Loose, wet, black and gray, silty SAND with clay, trace vegetation [FILL]	#7 silica sand (10-17 ft)
							Stiff, wet, black SILT with wood and vegetation [PEAT]	
							Medium stiff, moist, gray, silty CLAY, little root material, trace gravel and brown mottles	0.010-in. slot PVC screen, spiral wire wound (12-17 ft)
565	15						With wood	
							Bottom of boring at 17.0 feet	
560	20							
555	25							
	30							

URS

Project: BASF - Riverview Project Location: Riverview, Michigan Project Number: 38-08E06216.04	Log of Boring SMW-4 Sheet 1 of 1

Date(s) Drilled and Installed	8/4/00	Geologist	J. Mielecki	Reviewer	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X, 4.25-inch-ID / 8-inch OD auger)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	14.0 feet
Sampling Method	2-inch-OD and 3-inch-OD split spoon ("*" indicates lab sample)	Hammer Data	140 lbs / 30-inch drop	Top of Casing Elevation	581.41 feet IGLD
Size and Type of Well Casing	2-inch-ID PVC +2 ft to 5 ft bgs	Screen Perforation	0.010-inch slot (wire wound) 5-10 ft	Surface Elevation	579.27 feet IGLD
Seal or Backfill	Cement 0-3 ft, bentonite chips 3-4 ft	Groundwater Level(s)	6 feet BGS during drilling; 8.77 feet BTOC on 9/5/00	Coordinate Location	S 850.37 E 864.95

Elevation feet	Depth, feet	SAMPLES Type	Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	Graphic Log	MATERIAL DESCRIPTION	Well Completion Schematic	FIELD NOTES AND WELL DETAILS
										4-inch square steel protective casing
	0		S-1	0-2-4-10	22	<1		Soft, moist, brown to grayish brown, silty CLAY [TOPSOIL]		8-in.-dia. borehole
								Stiff, moist, brown, silty CLAY, trace gravel and fill material [FILL]		
								Becomes very stiff to hard, with no gravel		Cement (0-3 ft)
			S-2	17-36-27-22	22	<1		Becomes dry, tan, with gravel and cinders, trace brick and wood		
										Bentonite chips (3-4 ft)
575			S-3	7-7-10-6	8	<1		Becomes medium stiff to stiff		
	5									2-in.-ID PVC riser (+2 ft to 5 ft bgs)
			S-4	12-13-13-45	6	<1		Becomes stiff to very stiff, wet; predominantly fill material (wood and plastic) with some silt and gravel		
										#7 silica sand (4-14 ft)
			S-5	12-94/6"	0	--				
570										0.010-in. slot PVC screen, spiral wire wound (5-10 ft)
	10		S-6*	2-2-5-4	8	1		Loose, wet, brown, clayey SAND, trace silt and gravel		
			S-7	3-2-2-3	18	<1		Soft, wet, grayish brown, silty CLAY		
565								**Bottom of boring at 14.0 feet**		
	15									
560										
	20									
555										
	25									
550										
	30									

Project: BASF - Riverview
Project Location: Riverview, Michigan
Project Number: 38-08E06216.04

Log of Boring SMW-5

Date(s) Drilled and Installed	8/8/00	Geologist	J. Mielecki	Reviewer	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X, 4.25-inch-ID / 8-inch OD auger)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	8.0 feet
Sampling Method	No samples collected	Hammer Data	Not applicable	Top of Casing Elevation	577.85 feet IGLD
Size and Type of Well Casing	2-inch-ID PVC +2 ft to 3 ft bgs	Screen Perforation	0.010-inch slot (wire wound) 3-8 ft	Surface Elevation	575.77 feet IGLD
Seal or Backfill	Bentonite chips 0-2 ft	Groundwater Level(s)	Not measured during drilling; 5.35 feet BTOC on 9/5/00	Coordinate Location	S 503.50 E 914.47

Elevation feet	Depth, feet	SAMPLES: Type	Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	Graphic Log	MATERIAL DESCRIPTION	Well Completion Schematic	FIELD NOTES AND WELL DETAILS
								[SMW-5 was straight-drilled next to IMW-5. Lithology recorded below is copied from Log of Boring IMW-5 and is assumed to be generally representative of subsurface conditions at SMW-5.]		
575	0							Stiff, moist, brown, silty CLAY with vegetation [TOPSOIL]		8-in.-dia. borehole
								Very stiff, moist, industrial fill with silt, gravel, cinders, brick [FILL]		Bentonite chips (0-2 ft)
								Stiff, moist to wet, black SILT with gravel and wood [FILL]		2-in.-ID PVC riser (+2 ft to 3 ft bgs)
								Stiff, moist to wet, bluish green CLAY, trace gravel and cobbles [FILL]		
570	5							Very stiff, wet, black SILT with sand and gravel, trace brick [FILL]		#7 silica sand (2-8 ft)
										0.010-in. slot PVC screen, spiral wire wound (3-8 ft)
								Bottom of boring at 8.0 feet		
565	10									
560	15									
555	20									
550	25									
	30									

URS

Project: BASF - Riverview Project Location: Riverview, Michigan Project Number: 38-08E06216.04	**Log of Boring SMW-6** Sheet 1 of 1

Date(s) Drilled and Installed	8/8/00	Geologist	J. Mielecki	Reviewer	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X, 4.25-inch-ID / 8-inch OD auger)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	7.0 feet
Sampling Method	No samples collected	Hammer Data	Not applicable	Top of Casing Elevation	577.75 feet IGLD
Size and Type of Well Casing	2-inch-ID PVC +2 ft to 2 ft bgs	Screen Perforation	0.010-inch slot (wire wound) 2-7 ft	Surface Elevation	575.57 feet IGLD
Seal or Backfill	Bentonite chips 0-1.5 ft	Groundwater Level(s)	Not measured during drilling; 4.02 feet BTOC on 9/5/00	Coordinate Location	S 246.46 E 936.69

Elevation feet	Depth, feet	SAMPLES: Type	SAMPLES: Number	SAMPLES: Sampling Resistance, blows / 6 in.	SAMPLES: Recovery, inches	SAMPLES: Headspace PID, ppm	Graphic Log	MATERIAL DESCRIPTION *[SMW-6 was straight-drilled next to IMW-6. Lithology recorded below is copied from Log of Boring IMW-6 and is assumed to be generally representative of subsurface conditions at SMW-6.]*	Well Completion Schematic	FIELD NOTES AND WELL DETAILS
	0							Stiff, moist, dark brown CLAY with vegetation [TOPSOIL]		8-in.-dia. borehole
575								Stiff, moist, brown, silty CLAY with sand, gravel, and cinders [FILL]		Bentonite chips (0-1.5 ft)
								Medium dense, moist, tan SAND with gravel [FILL]		2-in.-ID PVC riser (+2 ft to 2 ft bgs)
								Becomes wet		
								Increasing gravel, some cobble-size concrete pieces		#7 silica sand (1.5-7 ft)
570	5							Very loose, wet, black SILT and SAND with cinders [FILL]		0.010-in. slot PVC screen, spiral wire wound (2-7 ft)
								Bottom of boring at 7.0 feet		
565	10									
560	15									
555	20									
550	25									
	30									

Report: ENV_12S/W_CLEV+/-USCS; File: BASFRIV4.GPJ; 10/3/2000 SMW-06

URS

Project: BASF - Riverview	Log of Boring SMW-9
Project Location: Riverview, Michigan	Sheet 1 of 1
Project Number: 38-08E06216.04	

Date(s) Drilled and Installed	8/4/00	Geologist	J. Mielecki	Reviewer	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X, 4.25-inch-ID / 8-inch OD auger)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	8.0 feet
Sampling Method	No samples collected	Hammer Data	Not applicable	Top of Casing Elevation	579.26 feet IGLD
Size and Type of Well Casing	2-inch-ID PVC +2 ft to 3 ft bgs	Screen Perforation	0.010-inch slot (wire wound) 3-8 ft	Surface Elevation	577.07 feet IGLD
Seal or Backfill	Bentonite chips 0-2 ft	Groundwater Level(s)	Not measured during drilling; 6.70 feet BTOC on 9/5/00	Coordinate Location	S 719.97 E 896.49

Elevation feet	Depth, feet	SAMPLES: Type	Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	Graphic Log	MATERIAL DESCRIPTION	Well Completion Schematic	FIELD NOTES AND WELL DETAILS
								[SMW-9 was straight-drilled next to DMW-9. Lithology recorded below is copied from Log of Boring DMW-9 and is assumed to be generally representative of subsurface conditions at SMW-9.]		
	0							Very stiff to hard, dry, tan SILT, trace sand and gravel [CAP MATERIAL]		8-in.-dia. borehole
								Very stiff to hard, dry, tan to brown SILT with sand, brick, and cinders [FILL]		Bentonite chips (0-2 ft)
575								Becomes dark gray, with brick, no sand or cinders		2-in.-ID PVC riser (+2 ft to 3 ft bgs)
								Moist, white DBO [FILL] With yellow brick and cinders		#7 silica sand (2-8 ft)
	5									
								Medium stiff, wet, black SILT with cinders, industrial slag, and gravel [FILL]		0.010-in. slot PVC screen, spiral wire wound (3-8 ft)
570								Medium stiff, wet, black SILT with organics [PEAT]		
								Soft, moist, dark gray, silty CLAY		
								Bottom of boring at 8.0 feet		
	10									
565										
	15									
560										
	20									
555										
	25									
550										
	30									

URS

Project: BASF - Riverview
Project Location: Riverview, Michigan
Project Number: 38-08E06216.04

Log of Boring SMW-10

Sheet 1 of 1

Date(s) Drilled and Installed	8/4/00	Geologist	J. Mielecki	Reviewer	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X, 4.25-inch-ID / 8-inch OD auger)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	8.0 feet
Sampling Method	No samples collected	Hammer Data	Not applicable	Top of Casing Elevation	577.81 feet IGLD
Size and Type of Well Casing	2-inch-ID PVC +2 ft to 3 ft bgs	Screen Perforation	0.010-inch slot (wire wound) 3-8 ft	Surface Elevation	575.67 feet IGLD
Seal or Backfill	Bentonite chips 0-2 ft	Groundwater Level(s)	Not measured during drilling; 4.10 feet BTOC on 9/5/00	Coordinate Location	S 377.16 E 923.30

MATERIAL DESCRIPTION

[SMW-10 was straight-drilled next to DMW-10. Lithology recorded below is copied from Log of Boring DMW-10 and is assumed to be generally representative of subsurface conditions at SMW-10.]

Elevation feet	Depth, feet	Samples: Type Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	Material Description	Field Notes and Well Details
	0					Medium stiff, moist, brown CLAY	8-in.-dia. borehole
575						Moist, dark brown to black, industrial fill: cinders, concrete, and gravel [FILL]	Bentonite chips (0-2 ft)
						Medium stiff to stiff, moist, gray and brown mottled CLAY [FILL]	2-in.-ID PVC riser (+2 ft to 3 ft bgs)
						Moist, brown and black, industrial fill, trace gravel [FILL]	
						Medium dense, moist, light brown, silty SAND [FILL]	
						Moist to wet, industrial fill with silt, black cinders, and concrete [FILL]	#7 silica sand (2-8 ft)
570	5						0.010-in. slot PVC screen, spiral wire wound (3-8 ft)
						Soft, wet, black, silty CLAY with concrete [FILL]	
						Bottom of boring at 8.0 feet	
565	10						
560	15						
555	20						
550	25						
	30						

Report: ENV_12S/W_CLEV+/-USCS; File: BASFRIV4.GPJ; 10/3/2000 SMW-10

URS

Project: BASF - Riverview	**Log of Boring SMW-11**
Project Location: Riverview, Michigan	Sheet 1 of 1
Project Number: 38-08E06216.04	

Date(s) Drilled and Installed	8/4/00	Geologist	J. Mielecki	Reviewer	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X, 4.25-inch-ID / 8-inch OD auger)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	6.0 feet
Sampling Method	No samples collected	Hammer Data	Not applicable	Top of Casing Elevation	577.70 feet IGLD
Size and Type of Well Casing	2-inch-ID PVC +2 ft to 1 ft bgs	Screen Perforation	0.010-inch slot (wire wound) 1-6 ft	Surface Elevation	575.77 feet IGLD
Seal or Backfill	Bentonite chips 0-0.5 ft	Groundwater Level(s)	Not measured during drilling; 3.91 feet BTOC on 9/5/00	Coordinate Location	S 48.36 E 946.61

Elevation feet	Depth, feet	SAMPLES: Type Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	Graphic Log	MATERIAL DESCRIPTION *[SMW-11 was straight-drilled next to DMW-11. Lithology recorded below is copied from Log of Boring DMW-11 and is assumed to be generally representative of subsurface conditions at SMW-11.]*	Well Completion Schematic	FIELD NOTES AND WELL DETAILS
575	0						Very stiff to hard, dry, tan, silty CLAY with sand, gravel, and slag; surficial vegetation		Bentonite chips (0-0.5 ft); 8-in.-dia. borehole
							Moist, white DBO [FILL]		#7 silica sand (0.5-6 ft); 2-in.-ID PVC riser (+2 ft to 1 ft bgs); 0.010-in. slot PVC screen, spiral wire wound (1-6 ft)
570	5						Medium dense, moist, black GRAVEL with sand, cinders, and industrial fill [FILL]		
							Bottom of boring at 6.0 feet		
565	10								
560	15								
555	20								
550	25								
	30								

Report: ENV_12S/W_CLEV+/-USCS; File: BASFRIV4.GPJ; 10/3/2000 SMW-11

URS

Project: BASF - Riverview **Project Location: Riverview, Michigan** **Project Number: 38-08E06216.04**	**Log of Boring SMW-12** Sheet 1 of 1

Date(s) Drilled and Installed	8/3/00	Geologist	J. Mielecki	Reviewer	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X, 4.25-inch-ID / 8-inch OD auger)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	12.0 feet
Sampling Method	No samples collected	Hammer Data	Not applicable	Top of Casing Elevation	584.19 feet IGLD
Size and Type of Well Casing	2-inch-ID PVC +2 ft to 7 ft bgs	Screen Perforation	0.010-inch slot (wire wound) 7-12 ft	Surface Elevation	582.17 feet IGLD
Seal or Backfill	Cement 0-3 ft, bentonite chips 3-5 ft	Groundwater Level(s)	Not measured during drilling; 11.08 feet BTOC on 8/5/00	Coordinate Location	S 895.49 E 688.88

Elevation feet	Depth, feet	SAMPLES: Type Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	Graphic Log	MATERIAL DESCRIPTION	Well Completion Schematic	FIELD NOTES AND WELL DETAILS

MATERIAL DESCRIPTION

[SMW-12 was straight-drilled next to DMW-12. Lithology recorded below is copied from Log of Boring DMW-12 and is assumed to be generally representative of subsurface conditions at SMW-12.]

Depth, feet	Elevation feet	Material description
0		Medium stiff to stiff, moist, dark brown, clayey SILT with vegetation
		Stiff, moist, light brown, silty CLAY, trace gravel [CAP MATERIAL]
	580	Stiff, moist, medium brown and gray mottled CLAY [FILL]
		Dry to moist, tan, sandy CLAY with gravel, trace cobbles [FILL]
5		Soft to medium stiff, moist to wet, gray SILT with gravel, DBO, and brick [FILL]
	575	Soft, wet, light gray, silty CLAY with DBO, paper, wood, and vegetation [FILL]
10		With gravel
		Stiff, moist, black SILT with gravel, brick, paper, and fibrous material [FILL]
	570	Bottom of boring at 12.0 feet
15	565	
20	560	
25	555	
30		

FIELD NOTES AND WELL DETAILS

- 4-inch square steel protective casing
- 8-in.-dia. borehole
- Cement (0-3 ft)
- Bentonite chips (3-5 ft)
- 2-in.-ID PVC riser (+2 ft to 7 ft bgs)
- #7 silica sand (5-12 ft)
- 0.010-in. slot PVC screen, spiral wire wound (7-12 ft)

Report: ENV_12S/W_CLEV+/-USCS; File: BASFRIV4.GPJ; 10/3/2000 SMW-12

Project: BASF - Riverview
Project Location: Riverview, Michigan
Project Number: 38-08E06216.04

Log of Boring SMW-13

Date(s) Drilled and Installed	8/8/00	Geologist	J. Mielecki	Reviewer	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X, 4.25-inch-ID / 8-inch OD auger)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	12.0 feet
Sampling Method	No samples collected	Hammer Data	Not applicable	Top of Casing Elevation	582.90 feet IGLD
Size and Type of Well Casing	2-inch-ID PVC +2 ft to 4 ft bgs	Screen Perforation	0.010-inch slot (wire wound) 4-12 ft	Surface Elevation	581.07 feet IGLD
Seal or Backfill	Cement 0-2.5 ft, bentonite 2.5-3.5 ft	Groundwater Level(s)	Not measured during drilling; 8.44 feet BTOC on 9/5/00	Coordinate Location	S 253.90 E 624.06

MATERIAL DESCRIPTION

[SMW-13 was straight-drilled next to DMW-13. Lithology recorded below is copied from Log of Boring DMW-13 and is assumed to be generally representative of subsurface conditions at SMW-13.]

Elevation, feet	Depth, feet	SAMPLES: Type	Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	Graphic Log	MATERIAL DESCRIPTION	Well Completion Schematic	FIELD NOTES AND WELL DETAILS
										4-inch square steel protective casing
	0							Medium stiff, moist, dark brown SILT [CAP MATERIAL]		8-in.-dia. borehole
580								Becomes stiff, brown, with trace clay and gravel		Cement (0-2.5 ft)
								Very stiff, moist, medium brown, clayey SILT, trace gravel and roots [FILL]		2-in.-ID PVC riser (+2 ft to 4 ft bgs)
								Becomes brown, with fill material		Bentonite chips (2.5-3.5 ft)
	5							Very stiff, moist, dark brown and gray CLAY with gravel and brick pieces [FILL]		#7 silica sand (3.5-12 ft)
575								Medium stiff to stiff, moist to wet, dark brown to black, silty CLAY with cinders and fill material, trace gravel and DBO [FILL]		0.010-in. slot PVC screen, spiral wire wound (4-12 ft)
								Becomes wet		
	10							Stiff, wet, black SILT with wood [FILL]		
570								Loose, wet, black and gray, silty SAND with clay, trace vegetation [PEAT]		
								Bottom of boring at 12.0 feet		
	15									
565										
	20									
560										
	25									
555										
	30									

Project: BASF - Riverview	Log of Boring SMW-14
Project Location: Riverview, Michigan	Sheet 1 of 1
Project Number: 38-08E06216.04	

Date(s) Drilled and Installed	8/7/00	Geologist	J. Mielecki	Reviewer	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X, 4.25-inch-ID / 8-inch OD auger)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	10.0 feet
Sampling Method	2-inch-OD split spoon ("*" indicates lab sample)	Hammer Data	140 lbs / 30-inch drop	Top of Casing Elevation	578.89 feet IGLD
Size and Type of Well Casing	2-inch-ID PVC +2 ft to 3 ft bgs	Screen Perforation	0.010-inch slot (wire wound) 3-8 ft	Surface Elevation	576.87 feet IGLD
Seal or Backfill	Bentonite chips 0-2 ft	Groundwater Level(s)	4 feet BGS during drilling; 5.62 feet BTOC on 9/5/00	Coordinate Location	S 1193.54 E 708.81

Elevation feet	Depth, feet	SAMPLES Type	Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	Graphic Log	MATERIAL DESCRIPTION	Well Completion Schematic	FIELD NOTES AND WELL DETAILS
	0		S-1	1-5-5-6	14	<1		Medium stiff, moist, brown, silty CLAY with vegetation [TOPSOIL]		8-in.-dia. borehole
575								Stiff, moist, brown, silty CLAY with vegetation, trace sand, gravel, slag, and fill material [FILL]		Bentonite chips (0-2 ft)
			S-2	14-5-4-5	10	<1		Loose, moist, light brown GRAVEL with sand [FILL]		2-in.-ID PVC riser (+2 ft to 3 ft bgs)
	5		S-3	14-0-1-5	2	<1		Becomes wet, with concrete fragments and fibrous orange plastic material		#7 silica sand (2-10 ft)
570			S-4*	2-1-1-1	10	<1		Very loose, moist to wet, black SAND		0.010-in. slot PVC screen, spiral wire wound (3-8 ft)
								Soft, wet, black and gray mottled, silty CLAY		
			S-5	0-1-2-2	20	<1		Soft, wet, black and gray, sandy CLAY		
	10							Bottom of boring at 10.0 feet		
535										
	15									
560										
	20									
555										
	25									
550										
	30									

Report: ENV_12SW_CLEV+/-USCS; File: BASFRIV4.GPJ; 10/3/2000 SMW-14

URS

Project: BASF - Riverview Project Location: Riverview, Michigan Project Number: 38-08E06216.04	**Log of Boring SMW-15** Sheet 1 of 1

Date(s) Drilled and Installed	8/7/00	Geologist	J. Mielecki	Reviewer	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X, 4.25-inch-ID / 8-inch OD auger)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	8.0 feet
Sampling Method	2-inch-OD split spoon ("*" indicates lab sample)	Hammer Data	140 lbs / 30-inch drop	Top of Casing Elevation	580.02 feet IGLD
Size and Type of Well Casing	2-inch-ID PVC +2 ft to 3 ft bgs	Screen Perforation	0.010-inch slot (wire wound) 3-8 ft	Surface Elevation	578.17 feet IGLD
Seal or Backfill	Bentonite chips 0-2 ft	Groundwater Level(s)	3.5 feet BGS during drilling; 8.23 feet BTOC on 9/5/00	Coordinate Location	S 1218.56 E 558.46

Elevation feet	Depth, feet	SAMPLES Type	Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	Graphic Log	MATERIAL DESCRIPTION	Well Completion Schematic	FIELD NOTES AND WELL DETAILS
	0		S-1	2-2-5-8	12	<1		Medium stiff, moist, dark brown, silty CLAY with vegetation [TOPSOIL]		8-in.-dia. borehole
								Stiff, moist, dark brown, silty CLAY with sand and gravel [CAP MATERIAL]		Bentonite chips (0-2 ft)
			S-2	3-2-2-2	11	<1		Medium stiff, moist, dark brown, silty CLAY with gravel and cinders, trace sand; reworked [FILL]		2-in.-ID PVC riser (+2 ft to 3 ft bgs)
575								Becomes wet		
	5		S-3*	2-3-6-7	24	<1		Stiff, moist, black, clayey SILT with cinders and industrial fill material [FILL]		#7 silica sand (2-8 ft)
			S-4	3-6-11-11	24	<1		Very stiff, moist, brown and gray mottled, clayey SILT, trace gravel, trace fill material to 7-foot depth		0.010-in. slot PVC screen, spiral wire wound (3-8 ft)
570								Bottom of boring at 8.0 feet		
	10									
565										
	15									
560										
	20									
555										
	25									
550										
	30									

Report: ENV_12S/W_CLEV+/-USCS; File: BASFRIV4.GPJ; 10/3/2000 SMW-15

URS

Project: BASF - Riverview **Project Location: Riverview, Michigan** **Project Number: 38-08E06216.04**	**Log of Boring SMW-16** Sheet 1 of 1

Date(s) Drilled and Installed	8/9/00	Geologist	J. Mielecki	Reviewer	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X, 4.25-inch-ID / 8-inch OD auger)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	10.0 feet
Sampling Method	2-inch-OD split spoon ("*" indicates lab sample)	Hammer Data	140 lbs / 30-inch drop	Top of Casing Elevation	577.45 feet IGLD
Size and Type of Well Casing	2-inch-ID PVC to 3 ft bgs	Screen Perforation	0.010-inch slot (wire wound) 3-8 ft	Surface Elevation	577.87 feet IGLD
Seal or Backfill	Cement 0-1.5 ft, bentonite 1.5-2.5 ft	Groundwater Level(s)	4 feet BGS during drilling; 4.94 feet BTOC on 9/5/00	Coordinate Location	S 1283.49 E 623.47

Elevation feet	Depth, feet	Samples: Type	Samples: Number	Samples: Sampling Resistance, blows / 6 in.	Samples: Recovery, inches	Samples: Headspace PID, ppm	Graphic Log	MATERIAL DESCRIPTION	Well Completion Schematic	FIELD NOTES AND WELL DETAILS
	0		S-1*	14-12-13-14	18	<1		4 inches of asphalt Slag, cinders, road base, and gravel (FILL)		9-inch-diameter flushmount cover Cement (0-1.5 ft)
575			S-2	5-50/6"	8	<1				Bentonite chips (1.5-2.5 ft) 2-in.-ID PVC riser (to 3 ft bgs)
			S-3	51/6"	0	–		Becomes wet		8-in.-dia. borehole
	5		S-4	7-4-2-6	12	<1				#7 silica sand (2.5-10 ft)
570			S-5	7-7-10-15	20	<1		Medium stiff, moist, brown and gray mottled CLAY, trace gravel Very stiff, moist, brown, silty CLAY		0.010-in. slot PVC screen, spiral wire wound (3-8 ft)
	10							Bottom of boring at 10.0 feet		
565										
	15									
560										
	20									
555										
	25									
550										
	30									

Report: ENV_12SW_CLEV+/-USCS; File: BASFRIV4.GPJ; 10/3/2000 SMW-16

URS

Project: BASF - Riverview	**Log of Boring SMW-17**
Project Location: Riverview, Michigan	Sheet 1 of 1
Project Number: 38-08E06216.04	

Date(s) Drilled and Installed	8/9/00	Geologist	J. Mielecki	Reviewer	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X, 4.25-inch-ID / 8-inch OD auger)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	12.0 feet
Sampling Method	2-inch-OD split spoon ("*" indicates lab sample)	Hammer Data	140 lbs / 30-inch drop	Top of Casing Elevation	576.16 feet IGLD
Size and Type of Well Casing	2-inch-ID PVC to 3 ft bgs	Screen Perforation	0.010-inch slot (wire wound) 3-8 ft	Surface Elevation	576.59 feet IGLD
Seal or Backfill	Cement 0-1.5 ft, bentonite 1.5-2.5 ft	Groundwater Level(s)	4 feet BGS during drilling; 3.34 feet BTOC on 9/5/00	Coordinate Location	S 31.96 E 827.54

Elevation feet	Depth, feet	SAMPLES Type	Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID/OVA, ppm	MATERIAL DESCRIPTION	FIELD NOTES AND WELL DETAILS
	0		S-1*	4-5-8-7	20	<1	Topsoil Stiff, moist, brown CLAY with sand, trace gravel, cinders, and fill material; reworked [FILL]	9-inch-diameter flushmount cover Cement (0-1.5 ft)
575			S-2	2-2-2-1	14	<1	Medium stiff, moist, brown, silty CLAY, trace gravel [FILL]	Bentonite chips (1.5-2.5 ft) 2-in.-ID PVC riser (to 3 ft bgs)
			S-3	1-8-10-9	18	<1	Becomes stiff to very stiff, wet, with blue slag and wood	8-in.-dia. borehole
	5		S-4	6-5-5-5	8	<1/20	Stiff, wet, black SILT with gravel Trace gravel	#7 silica sand (2.5-12 ft)
570			S-5	6-7-2-2	2	<1/<1		0.010-in. slot PVC screen, spiral wire wound (3-8 ft)
	10		S-6	NA	2	<1/<1	Soft, moist, grayish green CLAY, trace vegetation (roots)	
565							**Bottom of boring at 12.0 feet**	
	15							
560								
	20							
555								
	25							
550								
	30							

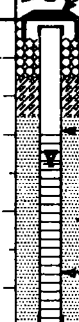
Report: ENV_12S/W_CLEV+/-USCS; File: BASFRIV4.GPJ; 10/3/2000 SMW-17

URS

Project: BASF - Riverview	Log of Boring SMW-18
Project Location: Riverview, Michigan	Sheet 1 of 1
Project Number: 38-08E06216.04	

Date(s) Drilled and Installed	8/9/00	Geologist	J. Mielecki	Reviewer	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X, 4.25-inch-ID / 8-inch OD auger)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	8.0 feet
Sampling Method	2-inch-OD split spoon ("*" indicates lab sample)	Hammer Data	140 lbs / 30-inch drop	Top of Casing Elevation	575.74 feet IGLD
Size and Type of Well Casing	2-inch-ID PVC to 3 ft bgs	Screen Perforation	0.010-inch slot (wire wound) 3-8 ft	Surface Elevation	576.24 feet IGLD
Seal or Backfill	Cement 0-1.5 ft, bentonite 1.5-2.5 ft	Groundwater Level(s)	Not encountered during drilling; 3.26 feet BTOC on 9/5/00	Coordinate Location	S 119.53 E 903.44

Elevation feet	Depth, feet	SAMPLES Type	Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	Graphic Log	MATERIAL DESCRIPTION	Well Completion Schematic	FIELD NOTES AND WELL DETAILS
	0		S-1*	4-6-7-7	18	<1		Medium dense, moist SAND with gravel, vegetation in upper 1 inch		9-inch-diameter flushmount cover; Cement (0-1.5 ft)
575								Stiff, moist, black and tan SILT with industrial slag [FILL]		Bentonite chips (1.5-2.5 ft)
			S-2	4-5-1-1	10	<1		Medium stiff, moist, light brown SILT with gravel		2-in.-ID PVC riser (to 3 ft bgs)
								Soft, moist, black CLAY with vegetation		
			S-3	1-1-1-1	12	<1				8-in.-dia. borehole
	5									#7 silica sand (2.5-8 ft)
570			S-4	2-0-1-1	24	<1				0.010-in. slot PVC screen, spiral wire wound (3-8 ft)
								Very soft to soft, wet, gray CLAY, trace vegetation (roots)		
								Bottom of boring at 8.0 feet		
565	10									
560	15									
555	20									
550	25									
	30									



Report: ENV_12S/W_CLEV+/-USCS; File: BASFRIV4.GPJ; 10/3/2000 SMW-18

Project: BASF - Riverview Project Location: Riverview, Michigan Project Number: 38-08E06216.04	**Log of Boring SMW-19** Sheet 1 of 1

Date(s) Drilled and Installed	8/9/00	Geologist	J. Mielecki	Reviewer	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X, 4.25-inch-ID / 8-inch OD auger)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	8.0 feet
Sampling Method	2-inch-OD split spoon ("*" indicates lab sample)	Hammer Data	140 lbs / 30-inch drop	Top of Casing Elevation	575.36 feet IGLD
Size and Type of Well Casing	2-inch-ID PVC to 3 ft bgs	Screen Perforation	0.010-inch slot (wire wound) 3-8 ft	Surface Elevation	575.91 feet IGLD
Seal or Backfill	Cement 0-1.5 ft, bentonite 1.5-2.5 ft	Groundwater Level(s)	4.5 feet BGS during drilling; 3.00 feet BTOC on 9/5/00	Coordinate Location	S 44.51 E 893.92

Elevation feet	Depth, feet	SAMPLES: Type	Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	Graphic Log	MATERIAL DESCRIPTION	Well Completion Schematic	FIELD NOTES AND WELL DETAILS
	0		S-1*	6-10-6-6	18	<1		Stiff, moist, black and brown SILT, trace clay, cinders, glass, and slag [FILL]		9-inch-diameter flushmount cover
575										Cement (0-1.5 ft)
			S-2	3-2-1-1	22	<1		Becomes soft to medium stiff, predominantly fill material (wood and slag)		Bentonite chips (1.5-2.5 ft)
								Soft, moist, black and gray, silty CLAY, trace gravel and vegetation [FILL]		2-in.-ID PVC riser (to 3 ft bgs)
			S-3	2-2-2-2	12	<1		Loose, moist, black, silty SAND, trace brick and slag [FILL] ∇ Becomes wet		8-in.-dia. borehole
	5									#7 silica sand (2.5-8 ft)
570			S-4	NA	11	<1		Soft, moist, light gray to dark gray, silty CLAY, trace vegetation [PEAT]		0.010-in. slot PVC screen, spiral wire wound (3-8 ft)
								Bottom of boring at 8.0 feet		
	10									
565										
	15									
560										
	20									
555										
	25									
550										
	30									

Report: ENV_12S/W_CLEV+/-USCS; File: BASFRIV4.GPJ; 10/3/2000 SMW-19

Project: BASF - Riverview	Log of Boring SMW-20
Project Location: Riverview, Michigan	Sheet 1 of 1
Project Number: 38-08E06216.04	

Date(s) Drilled and Installed	8/7/00	Geologist	J. Mielecki	Reviewer	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X, 4.25-inch-ID / 8-inch OD auger)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	12.0 feet
Sampling Method	2-inch-OD split spoon ("*" indicates lab sample)	Hammer Data	140 lbs / 30-inch drop	Top of Casing Elevation	582.98 feet IGLD
Size and Type of Well Casing	2-inch-ID PVC +2 ft to 5 ft bgs	Screen Perforation	0.010-inch slot (wire wound) 5-10 ft	Surface Elevation	580.87 feet IGLD
Seal or Backfill	Cement 0-3 ft, bentonite chips 3-4 ft	Groundwater Level(s)	8 feet BGS during drilling; 9.00 feet BTOC on 9/5/00	Coordinate Location	S 527.68 E 682.62

Elevation feet	Depth, feet	Type	Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	MATERIAL DESCRIPTION
	0		S-1	1-1-2-4	20	<1	Topsoil
580							Soft to medium stiff, moist, brown CLAY, trace gravel [CAP MATERIAL]
			S-2	4-4-3-4	20	<1	Medium stiff, moist, brown, silty CLAY [CAP MATERIAL]
							Stiff, moist, brown CLAY, trace gravel, brick, and fill material [FILL]
	5		S-3*	3-8-30-11	22	<1	Hard, moist, brown SILT with gravel, rock fragments, and fill material [FILL]
575			S-4	7-9-11-6	<1	–	Light brown slag, trace brown clay [FILL]
			S-5	1-4-3-2	10	<1	Medium stiff, wet, gray SILT with fill material, some paper [FILL]
							Becomes black, with less fill material
	10		S-6	0-1-1-1	10	<1	Soft, wet, black, silty CLAY, trace vegetation [PEAT]
570							
							Bottom of boring at 12.0 feet
	15						
565							
	20						
560							
	25						
555							
	30						

Graphic Log

Well Completion Schematic

FIELD NOTES AND WELL DETAILS

- 4-inch square steel protective casing
- 8-in.-dia. borehole
- Cement (0-3 ft)
- Bentonite chips (3-4 ft)
- 2-in.-ID PVC riser (+2 ft to 5 ft bgs)
- #7 silica sand (4-12 ft)
- 0.010-in. slot PVC screen, spiral wire wound (5-10 ft)

Project: BASF - Riverview Project Location: Riverview, Michigan Project Number: 38-08E06216.04	**Log of Boring SMW-21** Sheet 1 of 1

Date(s) Drilled and Installed	8/7/00	Geologist	J. Mielecki	Reviewer	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X, 4.25-inch-ID / 8-inch OD auger)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	8.0 feet
Sampling Method	2-inch-OD split spoon ("*" indicates lab sample)	Hammer Data	140 lbs / 30-inch drop	Top of Casing Elevation	581.18 feet IGLD
Size and Type of Well Casing	2-inch-ID PVC +2 ft to 3 ft bgs	Screen Perforation	0.010-inch slot (wire wound) 3-8 ft	Surface Elevation	579.27 feet IGLD
Seal or Backfill	Bentonite chips 0-2 ft	Groundwater Level(s)	4 feet BGS during drilling; 5.62 feet BTOC on 9/5/00	Coordinate Location	S 781.67 E 438.98

Elevation feet	Depth, feet	SAMPLES Type	Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	Graphic Log	MATERIAL DESCRIPTION	Well Completion Schematic	FIELD NOTES AND WELL DETAILS
	0		S-1	3-3-4-5	22	<1		Medium stiff, moist, dark brown, silty CLAY with vegetation [TOPSOIL]		8-in.-dia. borehole
								Medium stiff, moist, brown CLAY with cinders and gravel, trace orange sand [FILL]		Bentonite chips (0-2 ft)
			S-2*	8-4-4-4	18	<1		Becomes stiff, with DBO, no sand; appears reworked		2-in.-ID PVC riser (+2 ft to 3 ft bgs)
575			S-3*	5-1-1-1	16	<1		Soft, wet, black, silty CLAY, trace vegetation		#7 silica sand (2-8 ft)
	5							Moist, gray CLAY		0.010-in. slot PVC screen, spiral wire wound (3-8 ft)
								Bottom of boring at 8.0 feet		
570	10									
565	15									
560	20									
555	25									
550	30									

Project: BASF - Riverview Project Location: Riverview, Michigan Project Number: 38-08E06216.04	**Log of Boring SMW-22** Sheet 1 of 1

Date(s) Drilled and Installed	8/7/00	Geologist	J. Mielecki	Reviewer	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X, 4.25-inch-ID / 8-inch OD auger)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	8.0 feet
Sampling Method	2-inch-OD and 3-inch-OD split spoon ("*" indicates lab sample)	Hammer Data	140 lbs / 30-inch drop	Top of Casing Elevation	581.94 feet IGLD
Size and Type of Well Casing	2-inch-ID PVC +2 ft to 3 ft bgs	Screen Perforation	0.010-inch slot (wire wound) 3-8 ft	Surface Elevation	579.97 feet IGLD
Seal or Backfill	Bentonite chips 0-2 ft	Groundwater Level(s)	Not encountered during drilling; 7.98 feet BTOC on 9/5/00	Coordinate Location	S 364.15 E 357.63

Elevation feet	Depth, feet	SAMPLES: Type	Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	Graphic Log	MATERIAL DESCRIPTION	Well Completion Schematic	FIELD NOTES AND WELL DETAILS
	0		S-1	2-2-4-7	24	<1		Topsoil Medium stiff to stiff, moist, brown, silty CLAY [CAP MATERIAL]		8-in.-dia. borehole Bentonite chips (0-2 ft)
			S-2	4-4-8-16	20	<1				2-in.-ID PVC riser (+2 ft to 3 ft bgs)
								Very stiff, moist, dark brown SILT with cinders and gravel [FILL]		
575	5		S-3*	10-18-11-10	24	<1		Very stiff, moist, brown CLAY with cinders and brick [FILL]		#7 silica sand (2-8 ft)
			S-4	0-1-1-1	18	<1		Soft, moist, black, silty CLAY with peat layers		0.010-in. slot PVC screen, spiral wire wound (3-8 ft)
								Bottom of boring at 8.0 feet		
570	10									
565	15									
560	20									
555	25									
550	30									

Report: ENV_12S/W_CLEV+/-USCS; File: BASFRIV4.GPJ; 10/3/2000 SMW-22

URS

Project: BASF - Riverview
Project Location: Riverview, Michigan
Project Number: 38-08E06216.04

Log of Boring SMW-23

Date(s) Drilled and Installed	8/8/00	Geologist	J. Mielecki	Reviewer	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X, 4.25-inch-ID / 8-inch OD auger)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	10.0 feet
Sampling Method	2-inch-OD split spoon ("*" indicates lab sample)	Hammer Data	140 lbs / 30-inch drop	Top of Casing Elevation	582.47 feet IGLD
Size and Type of Well Casing	2-inch-ID PVC +2 ft to 4 ft bgs	Screen Perforation	0.010-inch slot (wire wound) 4-9 ft	Surface Elevation	580.57 feet IGLD
Seal or Backfill	Cement 0-2.5 ft, bentonite 2.5-3.5 ft	Groundwater Level(s)	5.5 feet BGS during drilling; 8.14 feet BTOC on 9/5/00	Coordinate Location	S 14.66 E 656.50

Elevation feet	Depth, feet	SAMPLES Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	MATERIAL DESCRIPTION
580	0	S-1	2-2-3-4	24	<1	Moist, brown, silty CLAY with vegetation [TOPSOIL]
						Medium stiff, moist, brown, silty CLAY, trace gravel and cinders [CAP MATERIAL]
		S-2	2-5-10-5	20	<1	Stiff, moist, brown CLAY, trace gravel
						Stiff, moist, dark brown CLAY, trace gravel and brick [FILL]
						Becomes brown; appears reworked
575	5	S-3*	2-5-5-12	20	<1	
						Stiff, wet, dark brown to black, silty CLAY with fill material [FILL]
		S-4	3-2-2-8	16	<1	Loose, wet GRAVEL and fill material [FILL]
						Loose, wet, gray, silty SAND
		S-5	1-0-1-1	24	<1	Very soft, wet, black, clayey SILT with vegetation [PEAT]
570	10					Bottom of boring at 10.0 feet
565	15					
560	20					
555	25					
	30					

FIELD NOTES AND WELL DETAILS (Well Completion Schematic)

- 4-inch square steel protective casing
- 8-in.-dia. borehole
- Cement (0-2.5 ft)
- 2-in.-ID PVC riser (+2 ft to 4 ft bgs)
- Bentonite chips (2.5-3.5 ft)
- #7 silica sand (3.5-10 ft)
- 0.010-in. slot PVC screen, spiral wire wound (4-9 ft)

Report: ENV_12S/W_CLEV+/-USCS; File: BASFRIV4.GPJ; 10/3/2000 SMW-23

URS

Project: BASF - Riverview
Project Location: Riverview, Michigan
Project Number: 38-08E06216.04

Log of Boring SMW-24

Date(s) Drilled and Installed	8/10/00	Geologist	J. Mielecki	Reviewer	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X, 4.25-inch-ID / 8-inch OD auger)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	16.0 feet
Sampling Method	2-inch-OD split spoon, Shelby tube	Hammer Data	140 lbs / 30-inch drop	Top of Casing Elevation	579.45 feet IGLD
Size and Type of Well Casing	2-inch-ID PVC +2 ft to 4 ft bgs	Screen Perforation	0.010-inch slot (wire wound) 4-12 ft	Surface Elevation	577.47 feet IGLD
Seal or Backfill	Cement 0-2.5 ft, bentonite 2.5-3.5 ft	Groundwater Level(s)	4 feet BGS during drilling; 6.77 feet BTOC on 9/5/00	Coordinate Location	S 1051.84 E 887.27

Elevation feet	Depth, feet	SAMPLES: Type	Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	Graphic Log	MATERIAL DESCRIPTION	Well Completion Schematic	FIELD NOTES AND WELL DETAILS
	0		S-1	2-4-6-6	8	<1		Moist, brown, silty CLAY with vegetation [TOPSOIL]		4-inch square steel protective casing; 8-in.-dia. borehole
								Loose, moist GRAVEL with slag [FILL]		Cement (0-2.5 ft)
575			S-2	2-4-5-3	12	<1		Loose, moist, light brown SAND, trace gravel		2-in.-ID PVC riser (+2 ft to 4 ft bgs); Bentonite chips (2.5-3.5 ft)
			S-3	7-4-2-3	14	<1		Becomes wet		
	5							Becomes gray, with no gravel		#7 silica sand (3.5-16 ft)
			S-4	9-10-9-6	10	<1		Loose, wet, black GRAVEL with silt, trace clay Becomes medium dense, with increasing silt		
570										0.010-in. slot PVC screen, spiral wire wound (4-12 ft)
			S-5	5-4-1-2	8	<1		Becomes loose, with decreasing silt, no clay		
								Loose, wet, brownish gray, clayey SAND		
	10		S-6	1-2-2-2	<1	<1		Becomes very loose to loose, grayish black		
565			S-7	3-3-3-4	8	<1		Medium stiff, moist, gray and brown mottled CLAY, trace gravel		
			ST-1	Push	24	–				
	15									
560								**Bottom of boring at 16.0 feet**		
	20									
555										
	25									
550										
	30									

URS

Log of Boring SMW-25

Sheet 1 of 1

Project: BASF - Riverview
Project Location: Riverview, Michigan
Project Number: 38-08E06216.04

Date(s) Drilled and Installed	8/10/00	Geologist	J. Mielecki	Reviewer	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X, 4.25-inch-ID / 8-inch OD auger)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	14.0 feet
Sampling Method	2-inch-OD and 3-inch-OD split spoon, Shelby tube	Hammer Data	140 lbs / 30-inch drop	Top of Casing Elevation	578.53 feet IGLD
Size and Type of Well Casing	2-inch-ID PVC +2 ft to 4 ft bgs	Screen Perforation	0.010-inch slot (wire wound) 4-12 ft	Surface Elevation	576.67 feet IGLD
Seal or Backfill	Cement 0-2.5 ft, bentonite 2.5-3.5 ft	Groundwater Level(s)	4 feet BGS during drilling; 6.14 feet BTOC on 9/5/00	Coordinate Location	S 752.14 E 925.61

Elevation feet	Depth, feet	Sample Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	MATERIAL DESCRIPTION	FIELD NOTES AND WELL DETAILS
	0	S-1	2-3-2-2	18	<1	Medium stiff, moist, medium brown, silty CLAY with vegetation [TOPSOIL]	4-inch square steel protective casing; 8-in.-dia. borehole; Cement (0-2.5 ft)
575		S-2	3-2-2-1	8	<1	Medium stiff, moist, brown CLAY with industrial slag [FILL] Medium stiff, moist, light brown, silty CLAY with industrial fill [FILL] Becomes predominantly black industrial fill	2-in.-ID PVC riser (+2 ft to 4 ft bgs); Bentonite chips (2.5-3.5 ft)
	5	S-3	NA	6	<1	Stiff, wet, brown CLAY with industrial fill material, trace silt [FILL]	#7 silica sand (3.5-14 ft)
570		S-4	2-1-1-1	<1	–	Loose, wet GRAVEL and industrial slag [FILL]	0.010-in. slot PVC screen, spiral wire wound (4-12 ft)
		S-5	0-0-1-0	24	<1	Very soft, wet, grayish brown, silty CLAY with vegetation; trace wood [PEAT]	
	10	S-6	0-0-1-1	15	<1	Very soft, moist, bluish gray, silty CLAY, trace vegetation (roots) Becomes grayish green	
565		ST-1	Push	24	–		
	14					Bottom of boring at 14.0 feet	

Report: ENV_12S/W_CLEV+/-USCS; File: BASFRIV4.GPJ; 10/3/2000 SMW-25

URS

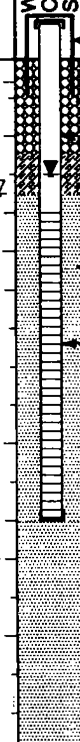
Project: BASF - Riverview
Project Location: Riverview, Michigan
Project Number: 38-08E06216.04

Log of Boring SMW-26

Date(s) Drilled and Installed	**8/11/00**	Geologist	**J. Mielecki**	Reviewer	**J. Anderson**
Drilling Method	**Hollow-stem auger (CME 750X, 4.25-inch-ID / 8-inch OD auger)**	Drilling Contractor	**Stearns Drilling (B. Grahm)**	Total Depth of Borehole	**18.0 feet**
Sampling Method	**2-inch-OD split spoon, Shelby tube**	Hammer Data	**140 lbs / 30-inch drop**	Top of Casing Elevation	**577.28 feet IGLD**
Size and Type of Well Casing	**2-inch-ID PVC +2 ft to 4 ft bgs**	Screen Perforation	**0.010-inch slot (wire wound) 4-12 ft**	Surface Elevation	**575.27 feet IGLD**
Seal or Backfill	**Cement 0-2.5 ft, bentonite 2.5-3.5 ft**	Groundwater Level(s)	**3.5 feet BGS during drilling; 5.01 feet BTOC on 9/5/00**	Coordinate Location	**S 345.74 E 969.25**

Elevation, feet	Depth, feet	Samples: Type / Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	MATERIAL DESCRIPTION
575	0	S-1	3-5-10-14	18	<1	Stiff, moist, dark brown, silty CLAY, trace gravel [TOPSOIL]
						Medium dense, moist, silty SAND with gravel and brick [FILL]
		S-2	5-9-6-2	16	<1	Medium dense, moist, black, clayey SAND, trace silt, slag, and cinders [FILL]
						Becomes wet
		S-3	2-1-1-1	12	<1	Soft, wet, black, clayey SILT with cinders and gravel [FILL]
570	5	S-4	5-4-3-2	8	<1	Medium stiff, wet, black SILT with sand and gravel, platy [FILL]
		S-5	NA	<1	<1	White material
565	10	S-6	1-0-1-1	<1	<1	Very loose, wet, black, clayey SAND [FILL]
		S-7	1-2-3-3	16	<1	Soft, moist, gray, silty CLAY with sand
						Medium stiff, moist, gray and brown mottled CLAY, trace gravel
		S-8	5-4-5-10	14	<1	Becomes stiff
560	15	ST-1	Push	NA	–	
						Bottom of boring at 18.0 feet
555	20					
550	25					
	30					

Well Completion Schematic



FIELD NOTES AND WELL DETAILS

- 4-inch square steel protective casing
- 8-in.-dia. borehole
- Cement (0-2.5 ft)
- 2-in.-ID PVC riser (+2 ft to 4 ft bgs)
- Bentonite chips (2.5-3.5 ft)
- #7 silica sand (3.5-18 ft)
- 0.010-in. slot PVC screen, spiral wire wound (4-12 ft)

URS

Project: BASF - Riverview	**Log of Boring SMW-27**
Project Location: Riverview, Michigan	Sheet 1 of 1
Project Number: 38-08E06216.04	

Date(s) Drilled and Installed	8/10/00	Geologist	J. Mielecki	Reviewer	J. Anderson
Drilling Method	Hollow-stem auger (CME 750X, 4.25-inch-ID / 8-inch OD auger)	Drilling Contractor	Stearns Drilling (B. Grahm)	Total Depth of Borehole	24.0 feet
Sampling Method	2-inch-OD and 3-inch-OD split spoon, Shelby tube	Hammer Data	140 lbs / 30-inch drop	Top of Casing Elevation	577.69 feet IGLD
Size and Type of Well Casing	2-inch-ID PVC +2 ft to 8 ft bgs	Screen Perforation	0.010-inch slot (wire wound) 8-16 ft	Surface Elevation	575.77 feet IGLD
Seal or Backfill	Cement 0-3 ft, bentonite chips 3-6 ft	Groundwater Level(s)	3 feet BGS during drilling; 5.52 feet BTOC on 9/5/00	Coordinate Location	S 136.67 E 1005.75

Elevation, feet	Depth, feet	SAMPLES Number	Sampling Resistance, blows / 6 in.	Recovery, inches	Headspace PID, ppm	MATERIAL DESCRIPTION
	0	S-1	4-4-4-9	20	<1	Stiff, moist, brown, silty CLAY with vegetation [TOPSOIL]
575						Loose, moist, light brown SAND
		S-2	4-4-9-14	15	<1	Becomes medium dense, moist to wet, brown
						Stiff, wet, black SILT with slag and plastic debris [FILL]
		S-3	4-4-7-3	16	5	
	5					
570		S-4	3-3-8-2	2	4	Predominantly slag, wood, and fill material recovered in sample
		S-5	4-3-5-6	12	3	Predominantly slag, cinders, and cobbles
	10	S-6	1-1-1-1	1	<1	Becomes soft, with increased soil content (silt and gravel)
565		S-7	7-8-6-6	12	5	Becomes stiff, with sand
		S-8	11-8-8-5	16	2	Predominantly fill material (brick, slag, cobbles)
	15					
560						Stiff, moist, brown and gray mottled CLAY
		S-9	NA	10	45	Soft, wet, black, silty CLAY, trace paper [PEAT]
		S-10	1-1-2-3	20	3	Soft, wet, black, clayey SILT
						Soft to medium stiff, moist, gray CLAY, trace gravel
	20	ST-1	Push	0	–	Soft, moist, gray, silty CLAY
555		ST-2	Push	24	–	
	25					**Bottom of boring at 24.0 feet**
550						
	30					

Well Completion Schematic — FIELD NOTES AND WELL DETAILS:

- 4-inch square steel protective casing
- 8-in.-dia. borehole
- Cement (0-3 ft)
- Bentonite chips (3-6 ft)
- 2-in.-ID PVC riser (+2 ft to 8 ft bgs)
- #7 silica sand (6-24 ft)
- 0.010-in. slot PVC screen, spiral wire wound (8-16 ft)

URS

Project: BASF - Riverview Project Location: Riverview, Michigan Project Number: 38-08E06216.04	Log of Test Pit TP-1 Sheet 1 of 1

Date(s) Excavated	8-31-00	Logged By	WILLIAM CLAYTON	Reviewed By	TIM WHIPPLE
Excavation Method	BACKHOE	Excavation Contractor		Total Depth (ft)	11'
Groundwater Level(s)	8.7'	Sampling Method	NA	Ground Suface Elevation(IGLD)	581.74
Excavation Backfill	MATERIAL PLACED BACK	Comments		Coordinates	S 905,E 735

Elevation feet	Depth feet	SAMPLES Type Number	SAMPLES Headspace PID,ppm	Graphic Log	MATERIAL DISCRIPTION	FIELD NOTES
	0				(FILL) MOIST, BROWN CLAY CAP MATERIAL	
	2					
	4				(FILL) AGGREGATE 3-4" DIAMETER	
	6					
	8				(FILL,) BRICKS, DEBRI, PARTIAL DRUM, METAL STRIPPING WOOD, NEWSPAPER, PLASTIC.	
	10					
	12				PEAT ENCOUNTERED @ 11' FEET BELOW GRADE,	
	14				NOTE: BACKGROUND PID READINGS CONTINUOUSLY MONITORED ONLY EXCEEDANCE OF BACKGROUND RECORDABLE ON TEST PIT LOGS.	

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URS

Project: BASF - Riverview	Log of Test Pit TP-2
Project Location: Riverview, Michigan	Sheet 1 of 1
Project Number: 38-08E06216.04	

Date(s) Excavated	8-31-00	Logged By	WILLIAM CLAYTON	Reviewed By	TIM WHIPPLE
Excavation Method	BACKHOE	Excavation Contractor		Total Depth (ft)	8'
Groundwater Level(s)	5.7'	Sampling Method	NA	Ground Suface Elevation(IGLD)	577.37
Excavation Backfill	MATERIAL PLACED BACK	Comments		Coordinates	S 1115, E 635

Elevation feet	Depth feet	SAMPLES: Type Number	SAMPLES: Headspace PID,ppm	SAMPLES: Graphic Log	MATERIAL DISCRIPTION	FIELD NOTES
	0				(FILL) MOIST, BROWN, SANDY CLAY.	
	2					
					(FILL) BRICK, STEEL BANDING, BOTTLES.	
	4					
	6					
					PEAT, MOIST DRY BLACK W/WOOD FRAGMENTS.	
	8				COMPOSITE 1 COLLECTED FROM TP-2 1- 8oz. JAR & 1- ENCORE SAMPLE @2:46p.m.	
	10					
	12					
	14				NOTE: BACKGROUND PID READINGS CONTINUOUSLY MONITORED ONLY EXCEEDANCE OF BACKGROUND RECORDABLE ON TEST PIT LOGS.	

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URS

Project: BASF - Riverview Project Location: Riverview, Michigan Project Number: 38-08E06216.04	Log of Test Pit TP-3 Sheet 1 of 1

Date(s) Excavated	8-31-00	Logged By	WILLIAM CLAYTON	Reviewed By	TIM WHIPPLE
Excavation Method	BACKHOE	Excavation Contractor		Total Depth (ft)	12'
Groundwater Level(s)	8.6	Sampling Method	NA	Ground Suface Elevation(IGLD)	579.98
Excavation Backfill	MATERIAL PLACED BACK	Comments		Coordinates	S 500, E 520

Elevation feet	Depth feet	SAMPLES: Type Number	SAMPLES: Headspace PID,ppm	SAMPLES: Graphic Log	MATERIAL DISCRIPTION	FIELD NOTES
	0				(FILL) MOIST, BROWN, SILTY CLAY.	
	2				LIMESTONE AGGREGATE 2-3" IN DIAMETER (FILL)	
	4				(FILL) MOIST BLACK FILL, WOOD, METAL SPRINGS	
	6				(FILL) DBO	H2S 6-8 ppm
	8				BLACK ORGANIC CLAY - PEAT	
	10				MOIST BROWN CLAY	
	12					
	14					

NOTE:
BACKGROUND PID READINGS CONTINUOUSLY MONITORED ONLY EXCEEDANCE OF BACKGROUND RECORDABLE ON TEST PIT LOGS.

URS

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Project: BASF - Riverview	Log of Test Pit TP-4
Project Location: Riverview, Michigan	Sheet 1 of 1
Project Number: 38-08E06216.04	

Date(s) Excavated	8-31-00	Logged By	WILLIAM CLAYTON	Reviewed By	TIM WHIPPLE
Excavation Method	BACKHOE	Excavation Contractor		Total Depth (ft)	12'
Groundwater Level(s)	7.0'	Sampling Method	NA	Ground Suface Elevation(IGLD)	581.42
Excavation Backfill	MATERIAL PLACED BACK IN EXCAVATION	Comments		Coordinates	S 180, E 500

Elevation feet	Depth feet	SAMPLES Type Number	SAMPLES Headspace PID,ppm	SAMPLES Graphic Log	MATERIAL DISCRIPTION	FIELD NOTES
	0				(FILL) MOIST, BROWN, CLAY.	
	4				(FILL) MOIST BROWN COMPACTED CLAY	
	7				(FILL) MOIST, WET, BLACK, DBO, BRICKS, CABLE, HOSE, RUBBER GASKETS, 5 GALLON STEEL PAIL.	
	12				11:16 COMPOSITE SAMPLE COLLECTED	

NOTE:
BACKGROUND PID READINGS CONTINUOUSLY MONITORED ONLY EXCEEDANCE OF BACKGROUND RECORDABLE ON TEST PIT LOGS.

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URS

Project: BASF - Riverview Project Location: Riverview, Michigan Project Number: 38-08E06216.04	Log of Test Pit TP-5 Sheet 1 of 1

Date(s) Excavated	8-31-00	Logged By	WILLIAM CLAYTON	Reviewed By	TIM WHIPPLE
Excavation Method	BACKHOE	Excavation Contractor		Total Depth (ft)	3'
Groundwater Level(s)	3'	Sampling Method	NA	Ground Suface Elevation(IGLD)	575.77
Excavation Backfill	MATERIAL PLACED BACK	Comments		Coordinates	S 380, E 880

Elevation feet	Depth feet	SAMPLES: Type Number	SAMPLES: Headspace PID,ppm	SAMPLES: Graphic Log	MATERIAL DISCRIPTION	FIELD NOTES
	0				6" - TOP SOIL (FILL) WOOD, STEEL, PLASTIC, BRICK, GLASS, CONCRETE	
	2					
	4				BACKEHOE REFUSED @ 3.8' ft 10:14 COLLECTED COMPOSITE SAMPLE FROM STOCKPILE (TP-5 COMP) 1- 8oz. JAR & 1 ENCORE SAMPLE	
	6					
	8					
	10					
	12					
	14				NOTE: BACKGROUND PID READINGS CONTINUOUSLY MONITORED ONLY EXCEEDANCE OF BACKGROUND RECORDABLE ON TEST PIT LOGS.	

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URS

Project: BASF - Riverview	Log of Test Pit TP-6
Project Location: Riverview, Michigan	Sheet 1 of 1
Project Number: 38-08E06216.04	

Date(s) Excavated	8-31-00	Logged By	WILLIAM CLAYTON	Reviewed By	TIM WHIPPLE
Excavation Method	BACKHOE	Excavation Contractor		Total Depth (ft)	12'
Groundwater Level(s)	11'	Sampling Method	NA	Ground Suface Elevation(IGLD)	583.65
Excavation Backfill	MATERIAL PLACED BACK IN EXCAVATION	Comments		Coordinates	S 360, E 625

Elevation feet	Depth feet	SAMPLES: Type Number	SAMPLES: Headspace PID,ppm	SAMPLES: Graphic Log	MATERIAL DISCRIPTION	FIELD NOTES
	0				(FILL) MOSIT BROWN CLAY	
	2				(FILL) MOIST BROWN COMPACTED CLAY	
	4					
	6				(FILL) MOIST GRAY CLAY	
	8					
			1-3		(FILL) WHITE LIGHT GRAY DBO	
	10					
					PEAT, MOIST, WET, BLACK SILTY SAND W/ WOOD FRAGMENTS	
	12				PID - 1-3 ppm	
	14					

NOTE:
BACKGROUND PID READINGS CONTINUOUSLY MONITORED ONLY EXCEEDANCE OF BACKGROUND RECORDABLE ON TEST PIT LOGS.

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URS

Project: BASF - Riverview Project Location: Riverview, Michigan Project Number: 38-08E06216.04	Log of Test Pit TP-7 Sheet 1 of 1

Date(s) Excavated	8-31-00	Logged By	WILLIAM CLAYTON	Reviewed By	TIM WHIPPLE
Excavation Method	BACKHOE	Excavation Contractor		Total Depth (ft)	8.5'
Groundwater Level(s)	6.5'	Sampling Method	NA	Ground Suface Elevation(IGLD)	577.42
Excavation Backfill	MATERIAL PLACED BACK	Comments		Coordinates	S 1098, E 885

Elevation feet	Depth feet	SAMPLES Type Number	Headspace PID,ppm	Graphic Log	MATERIAL DISCRIPTION	FIELD NOTES
	0				(FILL) SAND, GRAVEL W/ SOME CLAY	
	6				COBBLES & BOULDERS 18–24" IN DIAMETER	
	8				BLACK ORGANIC CLAY – PEAT	

Depth scale: 0, 2, 4, 6, 8, 10, 12, 14

NOTE:
BACKGROUND PID READINGS CONTINUOUSLY MONITORED ONLY EXCEEDANCE OF BACKGROUND RECORDABLE ON TEST PIT LOGS.

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URS

Project: BASF - Riverview	Log of Test Pit TP-8
Project Location: Riverview, Michigan	Sheet 1 of 1
Project Number: 38-08E06216.04	

Date(s) Excavated	8-31-00	Logged By	KEITH MAST	Reviewed By	TIM WHIPPLE
Excavation Method	BACKHOE	Excavation Contractor		Total Depth (ft)	7'
Groundwater Level(s)	5'	Sampling Method	NA	Ground Suface Elevation(IGLD)	576.70
Excavation Backfill	MATERIAL PLACED BACK	Comments		Coordinates	S 852, E 908

Elevation feet	Depth feet	SAMPLES Type Number	SAMPLES Headspace PID,ppm	SAMPLES Graphic Log	MATERIAL DISCRIPTION	FIELD NOTES
	0				(FILL) TOP SOIL, PIECES OF HOSE CLAY	
					(FILL) SAND & GRAVEL	
	2				(FILL) SAND, GRAVEL, SMALL PIECES OF CONCRETE, PLASTIC HOSE, WOOD SOME DBO	
	4					
					BLACK TO GRAY ORGANIC CLAY – PEAT	
	6					
	8					
	10					
	12					
	14				NOTE: BACKGROUND PID READINGS CONTINUOUSLY MONITORED ONLY EXCEEDANCE OF BACKGROUND RECORDABLE ON TEST PIT LOGS.	

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URS

Project: BASF - Riverview	Log of Test Pit TP-9
Project Location: Riverview, Michigan	Sheet 1 of 1
Project Number: 38-08E06216.04	

Date(s) Excavated	8-31-00	Logged By	KEITH MAST	Reviewed By	TIM WHIPPLE
Excavation Method	BACKHOE	Excavation Contractor		Total Depth (ft)	8'
Groundwater Level(s)	4'	Sampling Method	NA	Ground Suface Elevation(IGLD)	576.52
Excavation Backfill	MATERIAL PLACED BACK	Comments		Coordinates	S 606, E 927

Elevation feet	Depth feet	SAMPLES Type Number	SAMPLES Headspace PID,ppm	SAMPLES Graphic Log	MATERIAL DISCRIPTION	FIELD NOTES
	0–2				(FILL) SAND & GRAVEL	
	2–7				(FILL) WOOD, CERAMIC PIECIES, PLASTIC CABLE, DBO TO 3'	
	7–8				BLACK ORGANINC CLAY – PEAT	
	8, 10, 12, 14					

NOTE:
BACKGROUND PID READINGS CONTINUOUSLY MONITORED ONLY EXCEEDANCE OF BACKGROUND RECORDABLE ON TEST PIT LOGS.

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URS

Project: BASF - Riverview Project Location: Riverview, Michigan Project Number: 38-08E06216.04	Log of Test Pit TP-10 Sheet 1 of 1

Date(s) Excavated	8-30-00	Logged By	KEITH MAST	Reviewed By	TIM WHIPPLE
Excavation Method	BACKHOE	Excavation Contractor		Total Depth (ft)	12'
Groundwater Level(s)	NA	Sampling Method	NA	Ground Suface Elevation(IGLD)	578.71
Excavation Backfill	MATERIAL PLACED BACK IN EXCAVATION	Comments		Coordinates	S 28, E 806

Elevation feet	Depth feet	SAMPLES: Type Number	SAMPLES: Headspace PID,ppm	SAMPLES: Graphic Log	MATERIAL DISCRIPTION	FIELD NOTES
	0				(FILL) CLAY W/TOP SOIL	
	2					
	4				(FILL) SAND, GRAVEL (FROM FILTER PACK OF WELL M)	
	6				OILY LIQUID IN WELL SAND PACK	
	8				BLACK FIBROUS MATERIAL	
					PEAT, BLACK ORGANIC CLAY AND SILT	
	10				BLACK ORGANIC CLAY AND SILT SOME PEAT	
	12					
	14					

NOTE:
BACKGROUND PID READINGS CONTINUOUSLY MONITORED ONLY EXCEEDANCE OF BACKGROUND RECORDABLE ON TEST PIT LOGS.

Appendix C

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38-08E06216.04 (URS)	
Location: Riverview MI		Field Personal: WRC	
Well ID: DMW-1	Cont/ Diameter: GS PVC 2"		Start Time:
Weather:	Date: 8/11/00		End Time:
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C/°F				%		ml/min	ft (BTOC)	
T_{start} 10:18		20.							10.9	
10:53	6.81	20.0		3.26	8					intake@ 27.5
10:55	7.03	16.7		3.32	9					.095/liters my
11:02	7.12	16.6		3.34	9					
11:06	7.17	16.6		3.35	3					
11:11	7.18	16.7		3.35	3					
11:16	7.17	16.8		3.34	2					
11:27	7.18	17.4		3.35	2					
11:28	7.18	17.5		3.35	2					
8:54									12.46	intake@ 27.5'
9:01	7.23	19.3		3.42	3					
9:05	7.28	16.9		3.39	1					
9:11	7.26	17.5		3.39	2					
9:16	7.27	17.8		3.38	2					

Low Flow Groundwater Sample Collection Log

General Information					
Project Name: BASF Riverview			Project Number: 38-08E06216.04 URS		
Location: Riverview MI			Field Personal: WEC Matt		
Well ID: DMW-12	Cont/ Diameter: GS PVC 2"			Start Time:	
Weather:		Date: 8/29/00		End Time:	
Pump Type: Peristaltic Bladder			Tubing: 1/4"ID HDPE		

Field Monitoring Data and Paramters										
Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H⁺]	°C/°F				%		ml/min	ft (BTOC)	
T_{start}:										
unable to remove water w/ bladder pump - insufficient										
water used bailer to fill containers as per Matt Abdallah										

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38-08606216.04 (URS)	
Location: Riverview MI		Field Personal: WRC	
Well ID: SB-2	Cont/ Diameter: GS PVC 4"	Start Time:	
Weather:	Date: 8/8/00	End Time:	
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C/°F				%		ml/min	ft (BTOC)	
Tstart: 10:5[illegible]	7.87	21.9		5.70	77				7.70	Intake 10.7
10:57	7.73	19.5		5.78	61					
10:59	7.69	19.7		5.61	72					
11:06	7.66	19.7		5.59	78					
11:10	7.54	20.3		5.45	27					
11:13	7.54	19.9		5.53	78					
	7.53	19.9		5.39	76					

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF RIVERVIEW		Project Number: 38-08E06216.04	
Location: Riverview MI		Field Personal: J. MIELECKI / M. ABDALLAH	
Well ID: SMW-15	Cont/ Diameter: GS PVC 2"	Start Time: 9:13	
Weather: SUNNY 70°	Date: 8/21/00	End Time:	
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	0.1 -log[H+]	°C/°F		3%	10%	%		ml/min	ft (BTOC)	
Tstart: 9:13								150	8.71	INTAKE AT 9.5'
9:33	7.81	18.7		6.35	3.9			"		
9:38	7.95	19.1		.67	1.61					
9:43	7.92	19.3		.68	-4.90					
9:48	7.88	19.4		.69	5.00					
9:52	7.86	19.5		.70	-.7					
9:57	7.79	19.5		.73	9.4					WELL DRY ALLOW RECHARGE
										TAKE SAMPLES 10:25
										VOC, 5', METALS
11:24										Return to Continue SAMPLING

RBV

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF RIVERVIEW		Project Number: 38-08E06216.04 (URS)	
Location: Riverview MI		Field Personal: J. MIELECKI	
Well ID: DMW -11	Cont/ Diameter: GS PVC 2"		Start Time: 8:45
Weather: SUNNY 75°	Date: 8/24/00		End Time:
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C/°F				%		ml/min	ft (BTOC)	
T_{start}: 8:45								360	22.65	INTAKE AT 27'
8:47	6.58	16.0		3.31	385					
8:52	6.55	14.1		3.35	999					
8:57	6.69	13.8		3.37	999					
9:02	6.73	14.1		3.34	999					
9:07	6.80	15		3.35	141					
9:12	6.77	14.8		3.33	384					
9:17	6.76	13.8		3.34	990					
9:22	6.74	14.9		3.32	999					
9:27	6.77	16.1		3.30	999					WELL DRY NO SAMPLES
10:50										TAKE SAMPLES

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38-008E06216.04 (URS)	
Location: Riverview, MI		Field Personal: J. Mielecki	
Well ID: DMW-10	Cont/ Diameter: GS PVC 2"	Start Time:	
Weather: Sunny 75°	Date: 8/23/00	End Time:	
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters										
Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C/°F				%		ml/min	ft (BTOC)	
T_{start}: 1412	8							425	23.78	INTAKE AT 25 to 27'
1430	7.80	18.5		2.86	153					
1435	7.25	15.8		2.79	131					
1440	7.09	16.1		2.85	81					
1445	6.87	15.3		2.85	61					
1450	7.04	15.0		2.96	169					
1455	6.98	13.8		2.95	85					
1500	6.91	14.1		2.89	87					
1505	6.91	14.2		2.91	80					
1510										Sample Time
										Stop when well goes dry. Finish
										sampling at a later time.
8/24/00 7:40										-Return continue to sample
8/25/00 9:35										-Return to continue sample & finish
									27.93	Final water level

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38-08E06216.04 (URS)	
Location: Riverview, MI		Field Personal: J. Mielecki	
Well ID: BMW-1	Cont/ Diameter: GS PVC 2"		Start Time: 11:06
Weather: 75° Sunny	Date: 8/25/00		End Time:
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C/°F				%		ml/min	ft (BTOC)	
T_{start}: 10:55								260	22.85	
1107	7.38	17.6		3.33	999					
1112	7.46	16.3		3.39	319					
1117	7.46	16.2		3.40	188					
1122	7.39	16.0		3.43	133			260		
1127	7.33	15.5		3.45	99					
1132	7.35	15.4		3.46	93					
1137	7.35	15.6		3.48	116					
1142	7.34	15.3		3.48	97					Samples collected
1215									23.05	All samples collected

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38-08E06216.04 (URS)	
Location: Riverview, MI		Field Personal: J. Mielecki	
Well ID: DMW-13	Cont/ Diameter: GS PVC 2"		Start Time: 14:40
Weather:	Date: 8/24/00		End Time:
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H⁺]	°C/°F				%		ml/min	ft (BTOC)	
T_{start}: 14:40								450	21.55	INTAKE SET AT 29'
1454										
1456	6.46	18.5		2.25	382					
1500	6.48	17.3		2.21	295					
1503	6.40	16.4		2.27	222					
1508	5.18	17.7		2.29	102					
1513	5.41	17.0		2.25	82					
15:18	5.59	17.4		2.28	68					
15:23	6.55	17.3		2.34	46					
15:28	6.51	17.1		2.39	42					
15:33	6.60	17		2.46	74					
15:38	6.61	17.1		2.47	62					
15:43	6.60	17.3		2.51	58					
15:48	6.51	17.6		2.54	59					16:00 SAMPLES COLLECTED
										8/25/00 7:30 MORE SAMPLES
										8/25/00 9:00 Finish Samples

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38-08E06216.04 (URS)	
Location: Riverview, MI		Field Personal: J. Mielecki	
Well ID: SMW-13	Cont/ Diameter: GS PVC 2"		Start Time: 7:14
Weather: 70° Sunny	Date: 8/23/00		End Time:
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C/°F				%		ml/min	ft (BTOC)	
T_{start}: 7:14								200	7.81'	INTAKE AT 12.0'
7:18	11.84	16.2		2.27	47.2					
7:23	11.24	16.4		2.18	83.4					
7:28	11.88	16.9		1.76	94.3					
7:33	11.87	17.5		1.75	190.0					
7:38	11.85	17.5		1.74	278					
7:43	11.94	17.5		1.78	385					
7:48	11.82	17.4		1.85	515					
7:53	11.81	17.8		1.84	594					
7:58	11.80	17.8		1.81	675					
8:03	11.78	17.8		1.83	759					
8:08	11.78	17.8		1.91	804					
8:13	11.76	18.1		1.93	885					
8:15										Collect Samples

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38-OBE06216-04 (URS)	
Location: Riverview, MI		Field Personal: J. Mielecki	
Well ID: SMW-11	Cont/ Diameter: GS PVC 2"	Start Time: 14:45	
Weather: Sunny 75°	Date: 8/22/00	End Time: 16:40	
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H⁺]	°C/°F				%		ml/min	ft (BTOC)	
T_{start}: 14:45								~~3~~	~~3.71~~	3.71'
14:58	11.18	23.3		2.19	72.4			350		INTAKE AT 60 ft
15:02	11.14	22.4		2.29	40.2					
15:07	11.10	22.5		2.20	28.6					
15:12	11.10	22.1		2.32	21.9					
15:17	11.13	22.2		2.30	16.7					
15:22	11.11	22.0		2.27	10.8					
15:27	11.11	22.0		2.38	9.7					
15:32	11.08	22.0		2.32	11.1					
15:37	11.10	22.1		2.32	7.6					
15:42	11.05	22.3		2.60	3.9					
15:44	11.03	22.2		2.35	-1.5					
15:52	11.04	22.5		2.34	2.7					TAKE SAMPLES
									4.01'	FINAL

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38-08ED6126 04 (URS)	
Location:		Field Personal: J. Mielecki	
Well ID: IMW-11	Cont/ Diameter: GS PVC 2"		Start Time: 12:55
Weather: 75° Sunny	Date: 8/22/00		End Time:
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C/°F				%		ml/min	ft (BTOC)	
Tstart 12:55								300	3.59	
12:58								300		
13:00	10.57	19.8		2.70	62.6					
13:05	10.55	19.9		2.63	32.0					
13:10	10.60	20.4		2.64	16.7					
13:15	10.71	20.3		2.22	18.8					
13:20	10.78	20.0		2.75	11.2					
13:25	10.84	19.8		2.86	10.5					
13:30	10.86	19.8		2.88	9.5					
13:35	10.92	20.1		2.91	9.4					Samples Collected
14:35										Sample Complete
										TAKE DUP
										IMW-110

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF RIVERVIEW		Project Number: 38-08E06216.04 (URS)	
Location: Riverview, MI		Field Personal: J. MIELECKI	
Well ID: IMW-12	Cont/ Diameter: GS PVC 2"		Start Time: ~~7:10~~ 8:00
Weather: Pt. Cloudy 70°	Date: 8/22/00		End Time:
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C/°F				%		ml/min	ft (BTOC)	
T_{start} 7:10								25	11.13	INTAKE AT 17'
8:00	10.18	17.2		4.16	0.0			"		
8:05	10.18	16.2		4.40	-9.8			60		
8:11	10.18	16.1		4.42	-10			↓		
8:16	10.17	16.2		4.42	-10					
8:21	10.17	16.5		4.43	-10					COLECT Samples
11:00									11.63	FINAL H_2O LEVEL

9-6/18

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF RIVERVIEW		Project Number: 38-0BE06216.04 (URS)	
Location: Riverview, MI		Field Personal: J. MIELECKI, M. ABDALLAH	
Well ID: SMW-14	Cont/ Diameter: GS PVC	Start Time: 7:13	
Weather: SUNNY 70°	Date: 8/19/00	End Time:	
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C/°F				%		ml/min	ft (BTOC)	
Tstart: 7:13								380	5.41	INTAKE AT 7.50'
7:37	7.99	18.5	6.35	.26	6.3		-129			
7:42	7.88	18.5	7.69	.26	45		-122			
7:47	8.12	18.6	7.92	.26	3.4		-136			
7:52	8.24	18.5	7.83	.26	4.7		-130			
7:57	8.40	18.6	6.65	.26	4.8		-141			
8:02	8.33	18.8	6.86	.26	2.0		-144			
8:05	8.37	18.9	6.29	.26	-.5		-154			
8:09	8.37	19.1	6.87	.26	-3.2		-149			
8:14	8.38	19.1	10.92	.26	-4.5		-125			
8:19	8.40	19.1	7.81	.26	-5.9		-142			
8:24	8.46	19.1	5.93	.26	-5.4		-164			
										SAMPLE
									5.42	FINAL

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38.08E06216.04 (URS)	
Location: Riverview, MI		Field Personal: J. Mielecki	
Well ID: SMW-12	Cont/ Diameter: GS PVC 2"	Start Time: 12:45	
Weather: Sunny 75°	Date: 8/19/00	End Time: 17:50	
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters										
Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H⁺]	°C/°F				%		ml/min	ft (BTOC)	
T_{start}: 12:45	~~10.62~~	~~21.0~~			~~2.2~~			50	10.91	Set intake at 20 ft.
13:18	10.62	21.0		5.20	2.2					
13:23	10.53	20.6		5.22	3.7					
13:28	10.30	21.7		5.11	-3.0					
13:33	10.32	23.0		5.10	-7.3					
13:38	10.48	21.3		5.10	-9.2					
13:43	10.49	20.4		5.07	-9.4					
13:48	10.65	20.9		5.06	-10.0					13:54 Samples Collected

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38-D8ED6126.04 (URS)	
Location: Riverview, MI		Field Personal:	
Well ID: SMW-26	Cont/ Diameter: GS PVC 2"		Start Time:
Weather:	Date: 8/23/00		End Time:
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters										
Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H⁺]	°C/°F				%		ml/min	ft (BTOC)	TD 14.40
T_{start}:									4.82	
11:04	11.16	17.4		6.91	403					
11:08	11.15	17.2		6.42	410					
11:16	11.16	18.1		6.61	125					
11:20	11.20	17.7		6.00	80					
11:26	11.22	17.7		6.03	41					
11:32	11.18	17.9		6.02	40			185/min		
11:38	11.22	17.8		6.05	39					

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38-08E06126.04 (URS)	
Location: Riverview, HI		Field Personal:	
Well ID: Smw-27	Cont/ Diameter: GS PVC 2"		Start Time:
Weather:	Date: 8/22/00		End Time:
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C/°F				%		ml/min	ft (BTOC)	TD 18.28
T_{start}:										
									5.62	intake @ 17.5
16:41	11.34	16.7		29.5	387					
16.44	11.45	15.9		28.9	272					
16:47	11:43	15.7		26.8	230					
16:51	11.42	15.7		24.2	224					
16:55	11.42	15.4		22.3	209					
16:59	11.41	15.6		21.1	208					
17:07	11.39	15.7		~~20.9~~ 19.2	203					
17:12	11.40	15.7		18.2	156					
17:16	11.43	15.5		18.7	110					
17:21	11.42	15.6		18.7	90			240/min	2	
17:26	11.42	15.6		18.3	94					
8/23 9:31									5.64	will begin sampling

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38-08E06126.04 (URS)	
Location: Riverview, MI		Field Personal: WEC	
Well ID: P2-6	Cont/ Diameter: GS (PVC) 2"		Start Time:
Weather:	Date: 8/10/00		End Time:
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C/°F				%		ml/min	ft (BTOC)	
Tstart 8/10									5.70	Intake at 11.8
8:07	9.09	17.0		13.7	10					
8:09	9.20	16.3		13.8	28					
8:13	9.42	16.4		13.4	39					
8:17	9.57	16.5		12.6	30					
8:23	9.76	16.7		9.3	39					
8:29	9.80	16.5		8.2	10					
	9.81	16.6		7.60	10					
										Conducted Auto Cal
8:37	8.98	17.1		6.77	—					on unit
8:42	9.31	17.0		6.61	—					
	9.34	16.9		6.66						
8:55	9.38	16.9		6.46						3.0-3.5 gall. removed
										Flow measured @
										.29 liters/min

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38-08E6216.04 (URS)	
Location: Riverview, MI		Field Personal: WEC	
Well ID: ϕ MW-6	Cont/ Diameter: GS PVC 2"	Start Time:	
Weather:	Date: 8/7/00	End Time:	
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H⁺]	°C/°F				%		ml/min	ft (BTOC)	
T_{start}:									9.42	intake @ 10.6
/7/00 15:31	7.58	25.6		7.52	76					
15:35	7.57	23.1		7.48	77					
15:40	7.58	22.9		7.45	76					
16:25										well dry @ intake
8/.. 9:07									9.10	intake @ 10.5
9:57										well dry @ intake
6/7/00 7:59									9.66	intake @ 10.5
9:05										dry at intake
16:53									9.55	intake @ 10.5

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38-08E06126.04 (URS)	
Location: Riverview, MI		Field Personal: WEC	
Well ID: PZ-4	Cont/ Diameter: GS PVC 2"		Start Time:
Weather:	Date: 8/10/00		End Time:
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C/°F				%		ml/min	ft (BTOC)	
Tstart: 15:00									5.29	intake @ 11.5
15:14	10.05	20.1		19.4	145					
15:16	10.17	18.7		20.2	145					
15:22	10.24	19.1		20.6	143					
15:25	10.25	18.5		20.5	10					
15:29	10.29	18.8		20.3	5					.19 liter/min
15:35	10.37	18.7		20.3	-10					
15:39	10.42	18.8		20.2	-10					
15:42	10.43	18.7		19.7	-7					
16:45									5.60	@ completion of sampling

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38.08206216.04 (URS)	
Location: BASF Riverview, MI		Field Personal: Heidi Fredericks	
Well ID: MW-B	Cont/ Diameter: GS PVC	Start Time: 8:40	
Weather: Sunny 70°	Date: 8/10/00	End Time: 10:00	
Pump Type: Peristaltic		Tubing: 1/4"ID ~~HDPE~~ TYGON	

Field Monitoring Data and Paramters										
Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H⁺]	°C/°F		µS/cm		%		ml/min	ft (BTOC)	10.3 TD 0.73 = 1 vol
Tstart: 8:45	7.7	20°C		23	out of range - Low				5.75	recalibrating meter turbidity is incorrect
8:50	6.4	19		15	out of range					
8:55	8.2	20		15	"					Set intake at 9.5 ft
9:00	8.7	19		15	"					
9:05	8.9	19		15	"					1.0 gal purged
9:10	9.0	19		15	[illegible]					Purged 1.25 gals Total
										began Sampling at 9:10 Am
										ΔTW =
										6.27 ft after
										Sampling

Low Flow Groundwater Sample Collection Log

General Information					
Project Name:	BASF Riverview		Project Number:	38.08E06216.04 (URS)	
Location:	Riverview, MI		Field Personal:	Heidi Fredericks	
Well ID:	MW-E	Cont/ Diameter: GS PVC		Start Time:	8:25
Weather:	overcast ~~Sunny Humid~~ 78°	Date:	8/9/00	End Time:	10:10
Pump Type:	Peristaltic		Tubing:	1/4"ID HDPE	Tygon

±0.1 ±3% ±10%

Field Monitoring Data and Paramters										
Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C °F		mS/cm		%		ml/min	ft (BTOC)	9.61 Total depth .81 to purge
Tstart: 8:25	4.49	21.5		1.04	78				4.55	Intake set at
8:30	5.38	20.9		0.93	71					6 ft. 6 in
8:34	6.30	20.2		0.98	69					purged 1.25
8:38	6.75	19.6		1.47	23					gallons at 8:50 AM.
8:41	7.46	19.0		2.72	23					resent intake
8:45	7.69	19.2°		4.10	30					@ 7 ft
8:50	8.25	19.4		5.16	78					
9:00	8.81	22.3		6.02	67					Purged 1.5 gallons
9:03	9.09	22.0		6.80	69					Total
9:07	9.24	21.1		7.20	71					
9:10	9.36	20.8		7.20	21					Sampled at
9:14	9.42	21.4		7.20	24					9:25
9:17	9.42	21.3		7.20	24					
					8:15 Flow rate 250 mL per minute					
					8:35 1 minute 31 seconds per 250 mL					
					~~8:40 .75 liters per minute~~ Hr					6.47 DTW
9:20	9.42	20.1		7.47	23					after
					flow rate for sampling					Sampling
					Less than 250 mL per minute					

Low Flow Groundwater Sample Collection Log

General Information			
Project Name:		Project Number:	38-08E06216.04 (URS)
Location:	BASF Riverview	Field Personal:	Heidi Fredericks
Well ID: DMW-6	Cont/ Diameter: GS PVC	Start Time:	10:40
Weather: 78° overcast Humid	Date: 8/9/00	End Time:	12:45
Pump Type:	Peristaltic	Tubing:	1/4"ID ~~HDPE~~ Tygon

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H⁺]	°C/°F		mS/cM		%		ml/min	ft (BTOC)	24.0ft TD 2.96 purge amt.
T start: 10:40	8.18	18.0 C		2.71	40				5.50	Intake set @
10:45	7.78	19.1		2.75	71					17.5ft
10:49	7.41	17.7		2.77	21					flow rate less than 350 MLs
10:52	7.24	19.1		2.77	74					per minute
10:56	7.15	18.4		2.74	4					11:05 1/2 gallon purged
11:00	7.09	19.6		2.72	79					
11:04	7.12	16.6		2.71	79				Total amount	1.25 gallons purged
11:07	7.10	15.6		2.70	73					
11:10	7.09	15.6		2.74	22					DTW after sampling = 10.84ft
11:14	7.05	16.2		2.74	77					
11:17	7.03	16.3		2.73	78					
11:20	7.07	16.2		2.72	87					
11:25	7.08	16.7		2.72	91					
11:29	7.13	16.8		2.72	93					

flow rate During sampling Less than 250 ML per minute

~~8/10/00 7:45 began sampling DMW-5~~

HF ~~for metals, CN, wet Chem + NH_3~~

Low Flow Groundwater Sample Collection Log

General Information			
Project Name:		Project Number:	38-08E06216.04 (URS)
Location:	BASF Riverview	Field Personal:	Heidi Fredericks
Well ID: DMW-5	Cont/ Diameter: GS PVC	Start Time:	14:10
Weather: Sunny 85°	Date: 8/9/00	End Time:	17:45 will restart tomorrow on well at 7:45 A.M.
Pump Type:	Peristaltic	Tubing:	1/4"ID HDPE Tygon

Field Monitoring Data and Paramters										
Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C/°F		mS/cm		%		ml/min	ft (BTOC)	24.0 TD 2.86 gallons to purge 1 volume
T_{start}: 14:15	6.48	20.1		2.52	95				6.10	Intake set
14:18	6.33	20.1		2.56	95					at 23 ft
14:22	6.22	18.9		2.56	94					Total Purged=1.6 gallons
14:27	6.03	18.2		2.56	89					flow rate Less than 250 mL per minute
14:30	6.01	18.3		2.56	55					15:25 began
14:35	5.92	18.0		2.57	103					SAmpling DMW-5
14:38	5.91	18.9		2.56	97					17:45 stopped
14:42	5.95	20.0		2.58	57					SAmpling only collected
14:46	5.95	19.8		2.56	96					VOCS, PCBS, SVOCS & sulfate sample.
14:50	5.96	19.7		2.57	99					will continue tomorrow.
14:55	5.95	20.5		2.55	104					DTW 18.94 after Sampling
15:00	5.94	20.5		2.58	45					VOCS, PCBS, SVOCS Sulfate
15:05	5.86	20.7		2.57	90					
15:10	5.85	20.9		2.55	11				*	8/10/00 DTW 18.54 ft
15:15	5.83	20.8		2.58	12					before sampling
15:20	5.85	20.4		2.56	6					
* 8/10/00		7:45 A.M.	began	SAmpling	DMW-5	for	Metals,			CN, wet chem & NH3
					flow rate	Less	than			250 ML
					per 1 Minute				*	8/10/00 DTW 21.30 ft after Sampling

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38.08E06216.04 (URS)	
Location: Riverview, MI		Field Personal: WEC	
Well ID: SMW-5/99	Cont/ Diameter: GS 2" PVC	Start Time: 10:55	
Weather: Sunny 80°	Date: 8/7/00	End Time: 12:00	
Pump Type: Peristaltic		Tubing: 1/4"ID ~~HDPE~~ TYGON	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C/°F		mS/cm	NTU	%		ml/min	ft (BTOC)	Intake set @ 5.0'
Tstart: 10:55	7.65	24.3°		5.94	78				3.10	½ gal purged
11:00	7.69	22.3°		6.05	67					4.62 DTW after sampling
11:02	7.70	22.1°		5.94	60					
11:05	7.65	21.6°		5.86	75					
11:08	7.65	22.1°		5.78	78					

Samples Collected (Parameters and Presevations)

Check here	Analysis (Circle)	Container Type	Container Volume (mL)	Amount	Hold Time (Days)	Filtered? (Type)	Persevative Volume	Persevative Type	Persevative pH
☐	GN - Nitrite, BOD	Plastic	500		<2	No	-	-	-
☐	GA - COD, TOC, NH, TKN, NPN	Plastic	500		<28	No	10 Drops	H_2SO_4	<2
☐	MA - Total Metals	Plastic	500		<28	No	5ml	HNO_3	<2
☐	MAD - Dissolved Metals	Plastic	500		<28	Yes	5ml	HNO_3	<2
☐	MD - Dissolved Metals	Plastic	500		<1	No	5ml	HNO_3	<2
☐	POV - VOC 8260+	Glass	40		<14	No	5 Drops	HCl	<2
☐	POV - VOC BTEX	Glass	40		<14	No	5 Drops	HCl	<2
☐	ON - PCB/Pest	Amber	1000		<7	No		NaOH or H_2SO_4	5-9
☐	OB - Basic Extract	Amber	1000		<7	No	-	-	-
☐	OA - Acidic Extract	Amber	1000		<7	No	-	-	-

Shipment Record

Analytical Lab:	COC Number:
Method of Shipment:	Shipment Date:

Other Notes and Comments

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38-08E06216.04 (URS)	
Location: Riverview, MI		Field Personal: WEC	
Well ID: SMW-3	Cont/ Diameter: GS PVC 2"	Start Time:	
Weather:	Date: 8/14/00	End Time:	
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C/°F		3		%		ml/min	ft (BTOC)	
T_{start}: 14:52									5.00	intake @ 8.0'
14:55	7.40	22.8		6.87	254					
15:00	7.32	21.1		6.02	14					
15:03	7.24	21.1		5.42	9					
15:08	7.15	21.0		5.09	8					
15:11	7.14	21.0		4.98	7					
15:13	7.13	21.0		4.92	7					
15:19	7.09	21.2		4.90	5					
17:14										dry @ intake
16:00									6.72	intake @ 8.0

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38-08E06216.04 (URS)	
Location: Riverview, MI		Field Personal: WRC JM	
Well ID: SMW-1	Cont/ Diameter: GS PVC 2"		Start Time:
Weather:	Date: 8/15		End Time:
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H⁺]	°C/°F				%		ml/min	ft (BTOC)	
T_{start}: 10:51									7.22	intake at 11.0'
11:08	8.66	22.9		9.4	10					.075 liter/min
11:15	8.69	20.4		9.32	6					
11:20	8.63	20.5		8.76	1					.125 liter/min
11:24	8.51	20.7		8.18	2					
11:29	8.29	20.9		7.49	1					
11:33	8.11	20.9		7.09	3					
11:38	7.99	21.0		~~7.99~~ 6.97	4					
11:43	7.92	21.1		6.95	112					
11:48	7.96	21.2		7.00	6					
11:54	8.00	21.7		7.05	6					
12:01	8.04	22.6		7.13	6					

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38.08E06216.04 (URS)	
Location: Riverview, MI		Field Personal: Heidi Fredericks / Pete Swanson	
Well ID: MW-H	Cont/ Diameter: GS PVC	Start Time: 10:00	
Weather: Overcast 76°	Date: 8/15/00	End Time: 12:55	
Pump Type: Peristaltic		Tubing: 1/4"ID ~~HDPE~~ Tygon	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H⁺]	°C/°F		HF ~~25~~		% ~~HF~~		ml/min	ft (BTOC)	TD = 17.92 1 vol = 1.299gal
T_{start}: 10:05	9.36	15.6		28.4	3	3		~~2~~250	9.80	Set intake at 17.5 ft
10:08	9.07	16.1		19.4	78	78				
10:11	8.89	15.4		12.3	-2	-2				10:45 began sampling
10:14	8.72	15.8		12.7	-1	-1				17.62 ft
10:18	8.66	16.1		13.9	-2	-2			11.62	DTW after sampling.
10:21	8.61	16.2		14.6	-2	-2				VOCs, metals, sulfate + CN
10:25	8.55	15.9		14.9	-2	-2				purged 1 gallon
10:28	8.54	16.0		15.5	-2	-2				
10:31	8.54	16.1		15.8	-5	-5				
10:34	8.54	16.4		16.7	-2	-2				
10:39	8.55	16.9		16.6	-5	-5				
10:42	8.54	16.9		16.5	-2	-2				

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38.08E06216.04 (URS)	
Location: Riverview, MI		Field Personal: Heidi Fredericks	
Well ID: MW-C	Cont/ Diameter: GS PVC	Start Time: 10:18	
Weather: overcast	Date: 8/10/00	End Time: 11:25	
Pump Type: Peristaltic		Tubing: 1/4"ID ~~HDPE~~ TYGON	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	C/F		MS/cM		%		ml/min	ft (BTOC)	TD 8.5 0.39 = 1 volume
Tstart: 10:18	7.6	21 °C		2.7	15				6.04	flow rate
10:21	7.3	20 °C		2.6	out of range					250 ML per minute
10:25	7.2	20 °C		2.6	"					
10:28	7.2	20 °C		2.7	"					purged 1 gallon
10:32	7.2	20 °C		2.8	"					* 10:35 began sampling
										set intake at 7.5 ft
										11:17 AM reset intake @ 8.3 ft
										DTW after sampling
										— 8.05 ft

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38.08E06216.04 (URS)	
Location: Riverview, MI.		Field Personal: WEC	
Well ID: SMW-8	Cont/ Diameter: 2" GS PVC	Start Time: 14:49	
Weather: Overcast Cool 50-60°	Date: 8/3/00	End Time: 15:09	
Pump Type: Peristaltic		Tubing: 1/4"ID ~~HDPE~~ tygon	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C °F		mS/cm	NTU	%		ml/min	ft (BTOC)	
Tstart: 14:44	6.55	20.7		3.02	73				3.96	1 vol = .35
14:54	6.76	20.7		2.84	76					intake set @ 5.0'
14:59	6.75	20.6		2.85	73					
15:09	6.75	19.6		2.88	69					2.0-2.5 gal removed
15:10										dry at intake
4/00 8:15									6.02	intake set @ 6.80
8:55										well dry @ intake
14/00 11:45									6.58	intake @ 7.10
11:57										dry @ intake
1/14 13:34									7.10	intake at 7.20
13:59										well dry @ intake
9:12	7.20 HC	21.2°		2.78	79				4.0	intake set @ 6.0
9:26	7.19	20.6°		2.57	79					.35 1 volume 0.6 vol. purged
9:30	7.19	20.7°		2.57	79					
9:33	7.19	20.9°		2.55	79					

10:17

@ Completion 6.72'

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38.0880 6216.04 (URS)	
Location: Riverview, Mi		Field Personal: WRC	
Well ID: SMW-4-99	Cont/ Diameter: GS PVC 2"	Start Time: 17:34	
Weather:	Date: 8/3/00	End Time: 17:52	
Pump Type: Peristaltic		Tubing: 1/4"ID ~~HDPE~~ Tygon	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	±.1 -log[H⁺]	C °F		3%	10% NTU	%		ml/min	ft (BTOC)	H2O @ 9.66 BOW
Tstart: 17:34	6.26	20.2		5.54	69				4.48	.83 = 1 vol.
17:39	6.25	19.6		5.45	10					intake set at 8.5 BTC
17:43	6.17	19.7		5.42	10					
17:48	6.18	19.2		5.37	10					
17:52	6.14	19.0		5.1A	20					1.25 gal removed
18:04									5.50	
10:37									4.56	Pump intake @ 7.50

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38.0880G216.09 (URS)	
Location: Riverview, Mi		Field Personal: WEC	
Well ID: SMU-7	Cont/ Diameter: GS PVC 2"	Start Time: 16:04	
Weather:	Date: 8/3/00	End Time: 16:23	
Pump Type: Peristaltic		Tubing: 1/4"ID ~~HDPE~~ Tygon	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H⁺]	°C/°F			NTU	%		ml/min	ft (BTOC)	
T_{start}: 16:04	7.18	22.5		2.05	60				3.74	1.0 gal = 1 vol
16:14	7.18	21.2		1.93	69					1/2-1.0 gal removed
16:23	7.07	20.9		1.91	69					1.0-1.5 gal removed
17:00									6.5	
8/4/00 9:28									6.20	Pump intake @ 6.20
10:23										Pump dry @ intake
8/7/00 12:14									8.12	intake at 9.50

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38-08E06216.04 (URS)	
Location: Riverview, MI		Field Personal:	
Well ID: SMW-6-99	Cont/ Diameter: GS PVC 2"		Start Time:
Weather:	Date: 8/7/00		End Time:
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C/°F				%		ml/min	ft (BTOC)	
T_{start}:										
13:35									4.52	intake @ 6.52
13:37	8.07	26.6		4.84	75					
13:40	8.10	23.0		4.80	78					
13:43	8.02	22.7		5.28	78					
13:45	8.00	22.2		5.31	78					
13:49	7.99	22.0		5.39	78					~ .6 gallons removed
			Abandon	samples						
17:03									5.52	intake at 8.5

Low Flow Groundwater Sample Collection Log

General Information

Project Name: BASF Riverview		Project Number: 38-08ED6216.04 (URS)	
Location: Riverview, MI		Field Personal: WEC	
Well ID: SMW-2	Cont/ Diameter: GS PVC 2"	Start Time:	
Weather:	Date: 8/8/00	End Time:	
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C/°F				%		ml/min	ft (BTOC)	
T_{start}:									6.66	intake @ 10.5
14:26	8.06	22.1		13.0	84					
14:29	7.82	19.9		12.2	78					
14:31	7.70	19.7		12.1	80					
14:36	7.72	20.5		12.0	79					
14:39	7.72	20.5		12.0	78					
14:44	7.71	20.5		11.9	79					
										well dry @ 18:00 all URS samples collected. MP lacking several containers

Low Flow Groundwater Sample Collection Log

General Information			
Project Name:	BASF Riverview	Project Number:	38.08E06216.04 (URS)
Location:	Riverview, MI	Field Personal:	Heidi Fredericks
Well ID:	MW-D	Cont/ Diameter: GS PVC	Start Time: 15 12
Weather:	Sunny 79°	Date: 8/8/00	End Time: 15:55
Pump Type:	Peristaltic	Tubing:	1/4"ID ~~HDPE~~ Tygon

Field Monitoring Data and Paramters										
Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C/°F				%		ml/min	ft (BTOC)	9.61 TD ~~.84~~ - ~~[illegible]~~ vol.
Tstart: 15:12	10.21	21.2		30.9	94				4.38 ~~3.80~~	Intake at 8.06
15:15	10.66	20.5		32.0	95					
15:18	11.00	20.4		32.4	93					
15:21	11.11	20.2		32.5	93					
15:24	11.34	20.0		32.2	45					
15:29	11.58	19.9°		32.0	20					
15:32	11.59	20.1		32.0	60					
15:34	11.52	20.2		32.2	9					purged one gallON
15:40	11.60	20.1		32.3	14					per Pete we can sample
										1.25 gallONS total
										purged
			flow rate less than							Collected a
			250 ML per Minute							duplicate
										Sample
										labeled
										MW-DD
										4.40 DTW
										after sampling
										MD MS/MSD

17:00 SAMples

17:45 pm

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38.08E06216.04 (URS)	
Location: Riverview, MI		Field Personal: Heidi Fredericks	
Well ID: SB-1	Cont/ Diameter: GS PVC	Start Time: 11:20	
Weather: Sunny 79°	Date: 8/18/00	End Time: 12:10	
Pump Type: Peristaltic		Tubing: 1/4"ID ~~HDPE~~ Tygon	

	±0.1			±3%	±10%					
Field Monitoring Data and Paramters										
Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H⁺]	°C °F		μS/cm		%		ml/min	ft (BTOC)	1 volume 4.0 to purge
Tstart: 11:20	5.69	17.7		16.6	95				4.68	Intake at 11.5ft
11:25	7.46	19.5		16.3	95					1.25 gals purged
11:30	7.82	18.7		16.2	95					Total depth of
11:34	7.91	18.3		15.9	95					well 11ft
11:38	8.11	21.0		15.1	95					
1141	8.19	23.6		15.2	95					Well Dry
										13:20 sampled
										According to MDEQ & MP okay sample
			flow rate less than 250ML per							Two Minutes
										4.62 DTW
										after sampling

Low Flow Groundwater Sample Collection Log

General Information				
Project Name: BASF Riverview		Project Number: 38-08E06216.04 (URS)		
Location: Riverview, MI		Field Personal: WEC		
Well ID: DMW-2	Cont/ Diameter: GS PVC 2"		Start Time:	
Weather:	Date: 8/9/00		End Time:	
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE		

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H⁺]	°C/°F				%		ml/min	ft (BTOC)	
T_{start}:									8.60	intake@25.5
13:47	7.19	20.3		3.49	37					
13:51	7.02	19.5		3.44	54					
13:56	7.00	20.3		3.42	63					
14:00	7.03	21.0		3.32	55					
14:03	6.98	19.8		3.46	10					
14:14	~~6.6~~ 6.74	20.2		3.43	10					
14:20	6.92	20.3		3.46	10					
14:25	6.96	20.0		3.45	10					
14:30	6.95	20.6		3.46	9					

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38-08ED6216.04 (URS)	
Location: Riverview, MI		Field Personal: WEC	
Well ID: SB-3	Cont/ Diameter: GS PVC 4"	Start Time:	
Weather:	Date: 8/9/00	End Time:	
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H⁺]	°C/°F				%		ml/min	ft (BTOC)	
T_{start} 9:17									4.68	intake@8.0
9:28	9.83	21.2		35.1	86					
9:32	10.0	19.4		37.6	85					
9:37	9.93	19.7		36.9	85					
9:41	9.86	19.6		35.9	86					
9:46	9.79	19.8		35.2	84					

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38.08E06216.04 (URS)	
Location: Riverview, MI		Field Personal: Heidi Fredericks	
Well ID: MW-A	Cont/ Diameter: GS PVC	Start Time: 12:20	
Weather: Sunny 75°	Date: 8/11/00	End Time: 14:40	will restart Monday to finish sampling
Pump Type: Peristaltic		Tubing: 1/4"ID ~~HDPE~~ TYGON	

Field Monitoring Data and Paramters										
Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H⁺]	°C °F		MS/cM		%		ml/min	ft (BTOC)	TD 12.6 .74 gallons = 1 vol
T start: 12:20	8.91	20.8		.706	28			Less than 250ml per minute	7.99 ft	
12:25	8.40	19.6		.671	31					Set Intake @ 9.5 ft
12:30	8.03	19.4		.685	36					
12:36	7.64	20.4		3.66	36	← readjusted to 11.5 Intake 250 ml/min				
12:45	8.07	18.8		4.69	-10					
12:50	8.23	19.9		4.50	-10					
12:58	8.50	19.0		7.48	34					* readjusted Intake at 11.5 ft
13:05	8.77	19.5		8.23	326					
13:10	9.03	18.7		8.32	25					* purged over
13:15	9.10	18.9		8.36	22					∠ 2 gallons
13:17	9.20	18.0		8.54	15					
13:21	9.21	18.4		9.20	11					DTW after sampling
13:25	9.25	18.4		9.40	21					= 11.66 ft
13:30	9.28	18.2		9.40	6					

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38.08E06216.04 (LUBS)	
Location: Riverview, MI		Field Personal: Heidi Fredericks / Greg Meyring	
Well ID: PZ-3	Cont/ Diameter: GS PVC	Start Time: 9:00 A.M.	
Weather: Sunny 67°	Date: 8/11/00	End Time: 11:15	
Pump Type: Peristaltic		Tubing: 1/4"ID ~~HDPE~~ Tygon	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C/°F		mS/cm		%		ml/min	ft (BTOC)	.64 gallons = 1 volume TD 10 ft
Tstart: 9:00	9.48	19.1		10.50	-10				6.02	flow rate
9:05	9.49	19.1		9.70	17					less than 200 mL per
9:09	9.41	19.4		8.18	3					minute
9:14	9.37	19.0		7.64	-10					
9:19	9.30	18.9		6.74	12					Intake set at 9 ft
9:23	9.22	18.8		6.27	1					DTW 6.02 ft before sampling
9:26	9.19	18.7		6.18	-10					
9:30	9.11	18.9		5.85	-10					
9:35	9.04	18.9		5.89	2					
9:40	9.00	19.4		5.84	-10					
9:45	8.99	19.2		5.74	-10					
9:50	8.99	19.4		5.67	2					
9:55	8.98	19.6		5.57	3					purged 2.0 gallons
9:58	8.96	19.5		5.44	-10					DTW after
										sampling 6.40 ft

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38.08E06216.04 (URS)	
Location: Riverview, MI		Field Personal: Heidi Fredericks / Greg Meyring	
Well ID: PZ-2	Cont/ Diameter: GS PVC	Start Time: 7:50	
Weather: Sunny 67°	Date: 8/11/06	End Time: 9:40	
Pump Type: Peristaltic		Tubing: 1/4"ID ~~HDPE~~ Tygon	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C/°F				%		ml/min	ft (BTOC)	TD 10ft purge 1vol .60gal
Tstart: 7:50	6.28	19.0		9.9	10				6.21	*Horiba 10
7 55	10.19	18.1		1.32	6.2					*Switched - Horiba Meters 22
8:00	10.15	17.5		1.28	8.3					DTW is 6.21ft
8:03	10.17	17.6		1.20	8.5					Flow rate less than 250ML
8:06	10.15	17.5		.99	-10.0					per minute
8:10	10.17	17.7		2.2	-10.0					Intake is set @ 8.5ft
8:13	10.17	17.9		1.16	-10.0					Total of
8:16	10.17	18.0		1.18 HF	-10.0					1.25 gallons purged
8:19	10.18	18.0		1.12	-10.0					
8:22	10.17	17.9		1.19	-10.0					8:40 SAmpling A.M.
										DTW
										6.30 after SAmpling
										9:40 ended
										Sampling

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38.08E06216.04 (UB)	
Location: Riverview, MI		Field Personal: Heidi Fredericks / Pete Swanson "MP"	
Well ID: MW-K	Cont/ Diameter: GS PVC	Start Time: 15:40	
Weather: Sunny 85°	Date: 8/14/00	End Time: 17:40	
Pump Type: Peristaltic		Tubing: 1/4"ID ~~HDPE~~ TYGON	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C °F		mS/cm		%		ml/min	ft (BTOC)	TD=16 BTOC 1 vol = .66gals
T_{start} 15:40	7.28	19.4		60.3	90				11.90	setting the intake at 15 ft.
15:45	8.42	19.2		61.1	85					1 vol = .66gals
15:50	8.73	17.1		61.0	140					
15:53	8.86	16.7		60.9	68					16:00 sampling MW-K
15:57	8.94	16.6°		60.9	62					1 gallon purged total
16:00	8.94	16.2		60.9	56					
										17:00 "MP" Collecting MS/MSD
									12.24 ft	DTW after sampling

Low Flow Groundwater Sample Collection Log

General Information			
Project Name:	BASF Riverview	Project Number:	3808E06216.04 (URS)
Location:	Riverview, MI	Field Personal:	Heidi Fredericks
Well ID:	DMW-4	Cont/ Diameter: GS PVC	Start Time: 12:50
Weather: Sunny 79° Humid	Date: 8/14/00	End Time:	15:00
Pump Type:	Peristaltic	Tubing:	1/4"ID ~~HDPE~~ TYGON

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C/°F				%		ml/min	ft (BTOC)	DTW -9.49 ft TD = 26.15 ft
Tstart: 12:50	7.83	19.9		5.55	99				9.49	set intake at 23.5 FT
12:55	7.17	20.9		5.53	17					1 volume = 2.64 gallons
13:00	6.99	19.6		5.58	28					< than 2 gallons total purged
13:05	6.95	19.9		5.59	10					
13:08	6.89	19.4		5.55	26					13:35 Began
13:11	6.86	18.1		5.55	41					Sampling DMW-4
13:14	6.81	18.0		5.58	79					
13:17	6.75	17.0		5.58	63.					DTW 23.11 ft after sampling
13:20	6.67	17.0		5.57	51					
13:24	6.67	16.8		5.56	52					
13:27	6.67	17.2		5.57	50					

Low Flow Groundwater Sample Collection Log

General Information			
Project Name:	BASF Riverview	Project Number:	38.08E06216.04 (URS)
Location:	Riverview, MI	Field Personal:	Heidi Fredericks
Well ID: MW-A	Cont/ Diameter: GS PVC	Start Time:	8:45 A.M.
Weather: Overcast	Date: 8/14/00	End Time:	11:10 A.M.
Pump Type:	Peristaltic	Tubing:	1/4"ID ~~HDPE~~ Tygon

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C/°F		µS/cm		%		ml/min	ft (BTOC)	TD=12.6 .73 gallons to purge
T_{start}: 8:45									8.06	250 MLs per minute / Flowrate
8:55	9.47	18.1		9.8	27					Set Intake at 11.5 ft
9:00	9.41	17.8		8.42	39					
9:04	9.38	17.6		8.23	23					Finishing Collecting
9:08	9.34	17.5		8.62	10					Samples for MP from Friday
9:11	9.31	17.5		8.65	13					8/11/00 BNAs & PCBs
9:15	9.32	17.8		9.15	24					
9:18	9.37	18.8		10.2	45					
9:22	9.39	18.5		9.65	60					
9:25	9.38	18.4		9.71	65					
9:30	9.40	18.6		10.6	45					1.5 gallons Total
9:33	9.42	18.9		10.8	25					purged.
9:37	9.45	18.6		10.8	16					Pete Swanson from MP
9:40	9.44	18.6		10.7	11					Began sampling BNAs, PCBs at
9:44	9.45	18.9		10.9	11					9:50 A.M.
9:47	9.46	18.8		10.9	10					10:10 URS Started collecting
										a MS/MSD
										Sample from MW-1A
									DTW	11.24 ft after

Sampling for MS/MSD

Low flow sampling sheet

08/02/2000 1:25 PM

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 3808E0621604/00007	
Location: Riverview		Field Personal: Pete Swanson (MP), Craig Riley (URS)	
Well ID: SMW-4	Cont/ Diameter: GS PVC 2"	Start Time: 13:25	
Weather: Sunny, ~72°F, mod. wind, no precip	Date: 8/23/00	End Time: 15:30	
Pump Type: Peristaltic Geopump 2		Tubing: 1/4"ID HDPE Tygon	

Field Monitoring Data and Paramters

Time	pH	Temp°	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+] ±.1	°C °F	ug/L	mS/cm ±3%	±10%	g/L %	mV	ml/min	ft (BTOC)	Intake set @ 10.5' BTOC
T_{start}:									(before) 8.62 TOC	12.20 TD ~~TD~~
13:25	9.81	21.0	11.71	1.20	83.0	7	-302	≤250		
13:28	9.81	19.6	12.26	1.15	88.5	7	-303			
13:31	9.72	20.0	11.48	0.993	64.7	6.3	-294			
13:34	9.69	19.5	11.48	0.960	58.7	6.1	-290			
13:37	9.67	19.3	11.20	0.937	58.8	5.9	-287			
13:40	9.66	19.4	10.85	0.933	42.8	5.9	-288			
13:43	9.65	19.3	10.92	0.921	42.2	5.8	-288			
13:46	9.63	19.7	10.78	0.917	43.5	5.8	-283			
13:49	9.63	19.3	10.83	0.916	41.8	5.7	-288			
13:52	9.60	19.2	9.82	0.918	21.2	5.7	-288			
13:55	9.63	19.6	10.73	0.919	21.5	5.8	-290			±2.5 gal purged
13:58	9.63	19.3	10.75	0.912	21.1	5.7	-287		14:00	Take Sample (SMW-4)
									15:00	Take duplicate Sample (SMW-40)
	Note: Water was brown, w/ sulfuric odor, throughout purge/sample time.									
									(after) 8.61 TOC	

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 3808E0621604/00007	
Location: Riverview		Field Personal: Pete Swanson (MP), Craig Riley (VRS)	
Well ID: SMW-25	Cont/ Diameter: GS PVC 2"	Start Time: 9:50	
Weather: Sunny, ~70°F, no precip, slight/no wind	Date: 8/23/00	End Time: 11:00	
Pump Type: Peristaltic geopump2		Tubing: 1/4"ID HDPE tygon	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+] ±.1	°C/°F		mS/cm ±3%	±10%	%		ml/min	ft (BTOC)	intake set @ 12' BTOC
T_{start}:									(before) 5.92 TOC	14.40 TD
9:51	8.55	16.7		5.71	5					
9:55	8.71	16.2		5.54	8					
9:58	8.83	16.1		5.25	5					
10:01	8.87	16.2		4.92	3					
10:05	8.90	16.2		4.79	3					
10:08	8.93	16.2		4.68	3					
10:11	8.94	16.5		4.61	3					± 1.75 gal purged
10:14	8.95	16.5		4.55	3				10:20	↓ Take sample
									(after) 5.92	TOC

Note: Water was light brown to clear through duration of purge/sample

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 3808E0621604/00007	
Location: Riverview		Field Personal: Pete Swanson (MP), Craig Riley (URS)	
Well ID: SMW-24	Cont/ Diameter: GS PVC 2"		Start Time: 7:55
Weather: Partly sunny, ~70°F Slight/no wind, no precip.	Date: 8/23/00		End Time:
Pump Type: Peristaltic Geopump 2		Tubing: 1/4"ID HDPE tygon	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+] ±.1	°C/°F		mS/cm ±3%	±10%	%		ml/min	ft (BTOC)	intake set @ 12' BTOC
T start 8:00	8.97	17.1		7.77	Ø			250	(before) 6.65 TOC	14.43 TD
8:05	8.98	16.2		7.80	Ø					
8:08	8.98	16.3		7.78	Ø					
8:11	8.97	16.4		7.57	Ø					
8:15	8.92	16.5		7.12	Ø					
8:20	8.88	16.5		7.01	Ø					±1.75 gal purged
8:25	8.85	16.5		7.07	Ø				8:30	Take sample

Note: Water light brown to clear through duration of purge/sample. Observed sulfuric odor throughout sample/purge time

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 3808E0621604/00007	
Location: Riverview, MI		Field Personal: Pete Swanson (MP), Craig Riley (UES)	
Well ID: IMW-13	Cont/ Diameter: GS PVC 2"	Start Time: 12:35	
Weather: partly sunny, ~75° mod. wind, no precip	Date: 8/22/00	End Time: 15:00	
Pump Type: Peristaltic Geopump 2		Tubing: 1/4"ID HDPE tygon	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H⁺] ±.1	°C °F		mS/cm ±3%	±10%	%		ml/min	ft (BTOC)	intake set @ 16.5'
T_{start}:									before 8.67 TOC	19.27 TD
12:40	8.90	16.5		36.9	40					
12:45	9.33	15.5		37.2	28					
12:50	9.53	15.4		37.3	5					
12:54	9.62	15.1		37.5	2					
12:57	9.73	15.0		37.7	1					
13:01	9.79	15.0		37.9	1					
13:05	9.86	15.0		38.2	0	sun				
13:08	9.89	15.5		38.2	-1					
13:11	9.93	15.7		38.5	-1					± 2 gal purged
13:15	9.95	15.8		38.5	-1				13:20	Take Sample
	Note: Water was dark brown/black and foamy									
	for duration of purge/sample.									
	Not able to get 0 headspace in VOA vials									
									after 11.44	TOC

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF, Riverview		Project Number: 3808E0621604/00007	
Location: Riverview, MI		Field Personal: Pete Swanson (MP), Craig Riley	
Well ID: SMW-23	Cont/ Diameter: GS PVC 2"	Start Time: 8:15	
Weather: cloudy, mod wind no precip, ~60°F	Date: 8/22/00	End Time: 10:40	
Pump Type: Peristaltic Geopump 2		Tubing: 1/4"ID HDPE +tygon	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+] ±.1	°C °F	mS/cm ±3%	±3%	±10%	%		ml/min	ft (BTOC)	intake set @9.5' BTOC
T_{start}:								≤250	before 8.09 TOC	11.4 TD
~~8:15~~		8:15 – started purging, had to replace battery to ~10 8:45 – Restart purging								
8:47	8.11	18.8		5.70	49					
8:51	8.04	18.3		4.55	17					
8:55	7.97	18.2		4.48	16					
9:00	7.96	18.2		4.43	13					
9:03	7.95	18.2		4.42	11					± 2 gal purged after 30 min
9:06	7.94	18.2		4.39	9					
9:10	7.92	18.3		4.40	8					
9:15	7.92	18.3		4.38	7					
9:20	7.91	18.3		4.39	6				9:20	(SMW-23) Start Sample
									10:00	Take duplicate Sample (SMW-230)
	Note: Initial purge water was darkbrown and got lighter throughout purge monitoring									
									after 8.10	TOC

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 3808E0621604 /00007	
Location: Riverview, MI		Field Personal: Pete Swanson, Craig Riley	
Well ID: SMW-22	Cont/ Diameter: GS PVC	Start Time: 14:50	
Weather: sunny ~72° moderate wind	Date: 8/21/00	End Time:	
Pump Type: Peristaltic Geopump 2		Tubing: 1/4"ID HDPE Tygon	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	±.1 -log[H⁺]	°C/°F		mS/cm ±3%	±10%	%		ml/min	ft (BTOC)	intake set @ 9' BTOC
T_{start}:	±.1									
14:50	8.00	18.7		45.3	368			≤250	before 7.89 TOC	10.20 TD
14:55	8.20	17.7		45.6	273					
15:00	8.39	17.3		46.3	212					
15:05	8.50	16.9		46.4	220					
15:10	8.59	16.8		47.4	300					± 1.3 gal purged ↳ reached significant drawdown. Water dropped below intake
15:20	8.68	18.0		48.2	300+	– turbidity fluctuating				
15:30	8.72	18.9		47.4	300+	– turbidity fluctuating				
15:40	8.72	19.2		46.8	300+	–	"	"		
15:45	8.74	18.2		47.1	300+	– turbidity constantly rising				
15:50	8.77	18.6		47.1	300+	–	"			
16:00	8.76	18.0		47.9	300+	–	"			
16:05	8.73	18.0		47.3	300+	–	"			
16:10	8.73	18.0		47.8	300+	–	"		16:15	– Start sample

due to turbidity ... stabilizing

Notes: Water is black. Well run below intake. Recharging very slow

17:00 Dropped tube ≈ 6" to collect Metals, NH_3, + CN^-

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF - Riverview		Project Number: 3808E0621604/00007	
Location: Riverview, MI		Field Personal: Pete Swanson, Craig Riley	
Well ID: SMW-21	Cont/ Diameter: GS PVC 2"		Start Time: ~~12:45~~ 12:50
Weather: Sunny, Moderate wind, ~70°F	Date: 8/21/00		End Time: 14:00
Pump Type: Peristaltic Geopump 2		Tubing: 1/4"ID HDPE tygon	

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+] ±.1	°C/°F		mS/cm ±3%	±10%	%		ml/min	ft (BTOC)	10.39 TD
T_{start}:								≤250	before 5.52	intake set @ 9' BTOC
~~9:44~~	~~11.47~~	~~15.7~~		~~38.4~~	~~8~~			~~≤250~~		
~~9:48~~	~~11.90~~	~~15.7~~		~~37.5~~	~~5~~					
12:50	8.79	19.4		10.0	1					
12:55	8.48	18.9		9.4	3					
13:00	8.19	18.2		9.2	0					
13:05	7.94	18.2		9.2	-2					
13:10	7.79	18.5		9.1	-2					±1.3 gal purged
13:13	7.68	18.4		9.1	-2					
13:16	7.58	18.3		8.40	-2					
13:20	7.57	18.3		8.39	-2					±2 gal purged
13:24	7.48	18.3		8.36	-2					13:30 sampled well
		Note: water clear throughout purge/sample								
									5.58 TOC	
									after	

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF -Riverview		Project Number: 3808E06QU604/00007	
Location: ~~[illegible]~~ Riverview, MI		Field Personal: Pete Swanson, Craig Riley	
Well ID: SMW-20	Cont/ Diameter: GS PVC 2"	Start Time: 9:15	
Weather: Sunny, moderate wind, ~65°F	Date: 8/21/00	End Time: 10:30	
Pump Type: Peristaltic Geopump 2		Tubing: 1/4"ID HDPE tygon	

Field Monitoring Data and Paramters

Time	pH ±.1	Temp	DO	Cond. ±3%	Turbid. ±10%	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C/F		MS/cm		%		ml/min	ft (BTOC)	Intake set @ 10' BTOC
T_{start}:								≤250	9.00	12.31 TD
9:14	11.47	15.7		38.4	8					
9:18	11.90	15.7		37.5	5					
9:23	12.02	15.7		39.8	4					
9:27	12.12	15.6		41.5	4					± 1 Gal purged
9:31	12.18	15.5		43.0	4					
9:35	12.21	15.5		44.2	1					
9:38	12.17	15.6		45.4	1					
9:43	12.19	15.6		46.4	0					
9:47	12.17	15.6		47.0	0				9.07 TOC After	2+ gal purged
										9:55 Took sample
	Note:	Water was dark brown foamy for								10:30 well complete
		duration of purge/sample								

Low Flow Groundwater Sample Collection Log

General Information					
Project Name:	BASF Riverview	Project Number:	38.08E06216.04		
Location:	Riverview, MI	Field Personal:	Heidi Fredericks / Pete Swanson		
Well ID:	IMW-6	Cont/ Diameter: GS PVC		Start Time:	11:10
Weather:	rainy overcast	Date:	8/17/00	End Time:	12:20
Pump Type:	Peristaltic	Tubing:	1/4"ID ~~HDPE~~ TUGON		

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H⁺]	°C/°F		nS/cm		%		ml/min	ft (BTOC)	set intake a 13 ft
T_{start}: 11:10	11.03	15.1		41	4			<250	3.40	14.39 TD
11:15	11.42	14.9		40.3	5					
11:20	11.51	15.1		42.6	2					11:45 Started sampling
11:25	11.59	16.0		42.9	2					
11:28	11.64	15.3		44.9	-1				3.90	12:20 DTW
11:31	11.72	15.4		44.9	4					after sampling
11:34	11.72	15.6		45.9	2					2 gallons purge
11:37	11.72	15.9		46.4	2					
11:42	11.72	15.7		46.8	2					

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38.08E06216.04	
Location: Riverview, MI		Field Personal: Heidi Fredericks / Pete Swanson	
Well ID: SMW-6	Cont/ Diameter: GS PVC	Start Time: 8:30	
Weather: rainy	Date: 8/17/00	End Time: 10:02 A.M.	
Pump Type: Peristaltic		Tubing: 1/4"ID ~~HDPE~~ Tygon	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C/°F				%		ml/min	ft (BTOC)	9.28 ft TD
T_{start} 8:35	12.04	17.5		63.3	16			3.67		Set Intake @ 8.0 ft
8:38	12.13	17.1		64.4	11					gallons to purge 1 volume = .9 gallons
8:41	12.25	17.0		66.3	8					.75 gallons total purged
8:45	12.46	17.0		67.8	18					9:05 Sampling SMW6
8:50	12.48	17.0		67.8	4					
8:55	12.48	16.9		66.8	4					
9:00	12.49	16.9		67.7	3				DTW	3.82 ft after sampling

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: RIVERVIEW		Project Number: 38-08E06216.04	
Location: BASF RIVERVIEW		Field Personal: J. MIELECKI M. ABDALLAH	
Well ID: SMW-10	Cont/ Diameter: GS PVC 2"	Start Time:	
Weather: RAIN	Date: 8/17/00	End Time:	
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H⁺]	°C/°F				%		ml/min	ft (BTOC)	
T_{start}:										
10:16 ~~10:14~~									3.72	SET INTAKE AT 7.5'
10:28	12.67	17.5		3.95	119			350		
10:32	12.72	16.7		4.12	61.0			"		
10:36	12.70	16.7		4.03	29.0			"		
10:41	12.68	16.8		4.14	13.9			"		
10:46	12.65	16.7		3.94	13.8			"		
10:51	12.66	16.7		3.94	13.5			"		SAMPLED
									4.60	FINAL

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF RIVERVIEW		Project Number: 38.08 = 6216.04	
Location: ~~IMW-10~~		Field Personal: J. MIELECKI / M. ABDALLAH	
Well ID: IMW-10	Cont/ Diameter: GS PVC 2"		Start Time: 8:06
Weather: RAIN	Date: 8/17/00		End Time: 10:00
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H⁺]	°C/°F				%		ml/min	ft (BTOC)	
T_{start}:										INTAKE 12.5'
8:05									4.35	
8:20	12.46	15.9		3.48	-4.5			300		
8:34	12.47	16.0		3.49	-9.7			"		
8:38	12.50	15.9		3.61	-10			"		
8:42	12.49	15.8		3.63	-10			"		
8:47	12.49	15.9		3.66	-10			"		SAMPLE
									4.98	FINAL

Low Flow Groundwater Sample Collection Log

General Information			
Project Name:	BASF Riverview	Project Number:	38.08E06216.04
Location:	Riverview, MI	Field Personal:	Heidi Fredericks / Pete Swanson
Well ID:	MW-J	Cont/ Diameter: GS PVC	Start Time: 10:55
Weather:	Sunny 76°	Date: 8/16/00	End Time: 16:05
Pump Type:	Peristaltic	Tubing:	1/4"ID ~~HDPE~~ TYGON

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C/F		mS/cm		%		ml/min	ft (BTOC)	set intake @ 14.75ft.
Tstart: 11:00	9.45	18.4		54.3	76				10.90	TD = 15.53ft
11:05	9.45	17.1		46.4	11					1 vol = .75 gallons
11:10	9.46	16.6		36.1	4					DTW 10.90 ft before sampling.
11:15	9.52	17.8		35.1	76					
11:20	9.52	17.8		41.0	0					* purged over
11:25	9.54	16.1		39.5	9					2 gallons
11:30	9.54	16.3		38.1	12					
11:35	9.54	16.5		39.9	10					
11:40	9.43	16.6		44.5	17					
11:45	9.42	16.5		48.0	38					
11:52	9.38	18.2		52.2	68					12:05 - 12:40 Lunch Stopped
13:00	9.44	20.8		53.4	39					
13:03	9.48	16.4		49.6	18					* 13:15 began sampling
13:06	9.43	16.1		46.9	21					
13:10	9.38	16.1		49.9	26					11.71 DTW after sampling
13:14	9.37	15.9		49.3	22					

Low Flow Groundwater Sample Collection Log

General Information			
Project Name:	BASF Riverview	Project Number:	38.08E06216.04
Location:	Riverview, MI	Field Personal:	Heidi Fredericks
Well ID: MW-I	Cont/ Diameter: GS (PVC)	Start Time:	10:00 – 17:15
Weather: Overcast 76°	Date: 8/15/00	End Time:	8/16/00 7:30 – 10:40 finished sampling
Pump Type:	Peristaltic	Tubing:	1/4"ID ~~HDPE~~ Tygon

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C °F		S/M		%		ml/min	ft (BTOC)	TD = 11.91 1Vol = .45gallons
Tstart: 10:10	8.67	16.9		.429	2.7			<250	9.10	
10:15	8.77	18.2		.449	6.0					
10:20	8.79	20.1		.440	11.3					began sampling @
10:25	8.82	20.2		.451	1.0					
10:30	8.86	20.0		.496	4.1					– 11.62 DTW after sampling
10:35	8.80	19.7		.46	1.9					VOCs, Metals, Sulfate + CN
10:40	8.94	20.4		.466	-1.0					
10:45	8.94	21.8		.366	-2.5					
10:50	8.99	20.0		.476	-2.9					
10:55	9.00	19.2		.484	0.9					
11:00	9.04	19.2		.471	-3.0					
11:05	9.06	20.1		.494	-4.1					
11:10	9.08	20.6		.494	3.4					
11:15	9.09	20.2		.502	-3.0					
11:20	9.12	20.1		.507	-7.4					
11:25	9.13	20.0		.522	-7.1					
11:30	9.15	21.2		.522	-9.3					
11:45	9.17	18.9		.522	-5.0					
11:50	9.16	20.5		.529	-6.9					

Low Flow Groundwater Sample Collection Log

Page 2 of 2

General Information			
Project Name: BASF Riverview		Project Number: 38.08E06216.04	
Location: Riverview, MI		Field Personal: Heidi Fredericks	
Well ID: MW-I	Cont/ Diameter: GS PVC	Start Time: 10:00	8/16/00 7:30 began SAMpling
Weather: Overcast 76°	Date: 8/15/00	End Time: 17:15 ~~12:55~~	
Pump Type: Peristaltic		Tubing: 1/4"ID ~~HDPE~~ TYGON	8/16/00 10:40 stopped Sampling

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C/°F		S/M		%		ml/min	ft (BTOC)	Intake set at 11.5'
T_{start}:								~~450~~	9.10	DTW
12:00	9.17	19.9		.532	-5.3					11.6ft ~~11.62~~ after
12:05	9.16	20.1		.514	-3.9					Sampling
1210	9.15	23.1		.520	-7.9					vocs, sulfate, metals a CN
12:15	9.18	21.0		.539	-7.8					
12:20	9.16	22.3		.536	-4.0					
12:28	9.18	21.7		.547	-6.7					
12:32	9.19	22.4		.549	-7.0					
12:40	9.20	21.7		.565	-4.7					
12:43	9.19	21.5		.552	-5.2					1 gallon purged
12:45	9.18	21.1		.550	-4.8				8/16/00	DTW before sampling 9.52ft
										8/16/00 began
		Note: water light brown								SAMpling at 7:30 AM.
										SAMpling SVOCS, PCBS, wet chem list
									8/16/00	DTW after sampling
										10.7ft

Low flow sampling sheet

08/02/2000 1:25 PM

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF RIVERVIEW		Project Number: 38.08E06216.04	
Location:		Field Personal: J. MIELECKI S. Smith	
Well ID: SMW-5	Cont/ Diameter: GS PVC 2"	Start Time: 15:38	
Weather: CLEAR	Date: 8/16/00	End Time:	
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H⁺]	°C/°F				%		ml/min	ft (BTOC)	
T_{start}:										
15:38									5.20'	
15:39	7.77	20.9		18.2	93			350		COFFEE
15:43	7.96	19.5		18.1	92			"		"
15:46	7.97	19.5		17.6	49			"		"
15:50	7.98	19.4		17.9	44			"		"
15:54	8.50	19.1		17.9	34			"		"
15:57	8.78	19.1		17.9	29			"		"
16:00	8.92	19.1		17.8	25			"		"
16:03	9.04	19.2		17.4	16			"		"
16:06	9.00	19.2		17.7	13			"		"
16:12	9.02	19.3		17.4	13			"		"
16:30	SAMPLE									
17:15									5.18'	

Low Flow Groundwater Sample Collection Log

General Information				
Project Name: BASF Riverview		Project Number: 38-08E06216.04		
Location: Riverview, MI		Field Personal: J. Mievecki S. Smith		
Well ID: IMW-5	Cont/ Diameter: GS (PVC) 2"		Start Time: 13:37	
Weather: Clear	Date: 8/16/00		End Time: 15:30	
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE		

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C/°F				%		ml/min	ft (BTOC)	
T_{start}:										
13:37									5.02	
13:46	8.44	17.6		22.3	121			170		COFFEE
13:50	8.42	16.8		22.4	112			170		COFFEE
13:54	9.09	17.8		22.3	81			170		"
13:58	9.18	17.5		22.3	72			"		"
14:03	9.24	18.1		22.3	68			"		"
14:07	9.33	17.8		22.5	62			"		"
15.30									5.94	FINAL

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38 OBE06216-04	
Location: Riverview MI		Field Personal: J. Mielecki M. Abdallah	
Well ID: IMW-9	Cont/ Diameter: GS PVC 2"	Start Time: 8:20	
Weather: Cloudy	Date: 8/18/00	End Time: 9:41	
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H⁺]	°C/°F				%		ml/min	ft (BTOC)	
T_{start}: 8:20								300	6.31	INTAKE AT 13.0'
8:38	9.94	16.1		.80	123			"		
8:43	9.95	16.1		.83	131					
8:48	9.97	16.2		.83	110					
8:53	9.99	16.2		.83	104					
8:58	10.06	16.3		.8.2	95.7					
9:01	10.08	16.4		.81	85.5					
9:06	10.09	16.3		.80	84.3					
										SAMPLES COLLECTED

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38.OBE06216.04	
Location: Riverview MI		Field Personal: J. Mielecki M. Abdallah	
Well ID: SMW-9	Cont/ Diameter: GS PVC 2"		Start Time: 6:58
Weather: Cloudy	Date: 8/18/00		End Time: 8:15
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C/°F				%		ml/min	ft (BTOC)	
T_{start}: 658								300	6.52'	INTAKE AT 7.5'
7:23	12.30	17.9		1.17	29.8					
7:28	10.09	17.6		.571	-3.8					
7:33	9.85	17.5		.571	-6.3					
7:38	9.81	17.4		.570	-6.5					
7:43	9.77	17.4		.560	-7.0				6.46	SAMPLES COLLECTED

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38-08E06216.04	
Location: Riverview, MI		Field Personal: J. Mielecki / M. Abdallah	
Well ID: IMW-1	Cont/ Diameter: GS PVC 2"	Start Time: 10:15	
Weather: Cloudy	Date: 8/18/00	End Time: 13:10	
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C/°F				%		ml/min	ft (BTOC)	
T_{start}: 10:15									6.76	INTAKE AT 13' DEEP
10:29	7.36	17.5		.28	.4			300		
10:34	7.04	16.6		.36	29.3					
10:37	7.03	16.7		.35	3.9					
10:42	6.90	16.9		.35	2.9					
10:48	6.91	16.8		.34	-5.3					
10:53	7.05	16.8		.34	16.2					
10:58	7.09	16.9		.35	-6.7					
11:03	7.02	17.1		.35	7.3					
11:06	6.89	17.3		.34	-5.0					SAMPLES COLLECTED

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38-08E06216.04	
Location: Riverview, MI		Field Personal: WEC	
Well ID: SMW-16	Cont/ Diameter: GS PVC 2"	Start Time:	
Weather:	Date: 8/22/00	End Time:	
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C/°F				%		ml/min	ft (BTOC)	TD 8.06
T_{start}:										
14:05									4.84	intake @ 7.50
14:08	11.17	23.2		2.83	20					
14:11	11.24	22.3		2.97	14			185		
14:15	11.25	22.7		2.87	11					
14:18	11.27	22.8		2.10	12					
14:22	11.11	22.9		2.09	3					
14:26	11.04	23.2		1.92	3					
14:29	11.03	23.2		1.87	2					
14:36	11.01	23.3		1.82	2					
14:40	11.00	23.4		1.79	4					
14:44	10.99	23.3		1.80	3					

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38 08E06216.04	
Location: Riverview, MI		Field Personal: WEC	
Well ID: SMW-17	Cont/ Diameter: GS PVC 2"	Start Time:	
Weather:	Date: 8/22/00	End Time:	
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters										
Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	11 -log[H+]	°C/°F		3	10	%		ml/min	ft (BTOC)	TD 7.70
T_{start}:										
10:30									3.06	intake @ 7.2
10:40	10.10	18.9		.392	143			240/min		40ml/10sec
10:44	10.11	19.1		.352	23					
10:47	10.01	19.4		.343	8					
10:51	9.95	19.6		.346	6					
10:54	9.87	19.6		.351	5					
10:59	9.74	19.6		.356	5					
11:03	9.53	19.6		.364	5					
11:08	9.46	19.6		.368	5					
11:11	9.39	19.6		.373	5					
11:13	9.35	19.6		.379	4					

Low Flow Groundwater Sample Collection Log

General Information

Project Name: BASF Riverview		Project Number: 38-08ED6216.04	
Location: Riverview, MI		Field Personal:	
Well ID: SMW-19	Cont/ Diameter: GS PVC 2"	Start Time:	
Weather:	Date: 8/21/00	End Time:	
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C/°F				%		ml/min	ft (BTOC)	
T_{start}:										TD 8.04
15:48									2.48	
16:01	6.74	17.4		1.85	225					intake @ 7.50
16:04	6.68	17.5		1.56	29					
16:06	6.69	18.0		1.47	19			266/min		
16:09	6.73	18.3		1.33	12					
16:16	6.83	18.6		1.19	3					
16:21	6.82	18.4		1.17	3					
16:29	6.83	18.4		1.18	3					

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38-08ED6216.04	
Location: Riverview, MI		Field Personal: WEC SF(MP)	
Well ID: MW-18	Cont/ Diameter: GS PVC 2"		Start Time:
Weather:	Date: 8/21/00		End Time:
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters										
Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C/°F		3	10	%		ml/min	ft (BTOC)	
T_{start}:										
12:55									3.06	intake @ 7.30
13:05	10.46	18.6		2.23	39					
13:08	10.20	17.0		2.14	25					
13:11	9.92	17.1		1.91	22					40ml/12sec
13:14	9.61	17.6		1.81	16			200/min		
13:18	9.43	17.7		1.79	13					
13:22	9.25	17.8		1.78	10			185/min		
13:25	9.13	17.9		1.79	8					
13:29	8.98	17.8		1.80	9					
13:34	8.86	18.1		1.83	8					
13:37	8.82	18.2		1.84	11					
13:42	8.80	17.7		1.87	14			120/min		40ml/20sec
13:47	8.75	17.6		1.90	19					
13:57	8.74	17.8		1.92	20					

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38-08ED62110.04	
Location: Riverview, MI		Field Personal: WEC	
Well ID: MW-L	Cont/ Diameter: GS PVC 2"	Start Time:	
Weather:	Date: 8/16/00	End Time:	
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H⁺]	°C/°F				%		ml/min	ft (BTOC)	Bow - 7.90
T_{start}: 2:44									7.00	intake @ 7.8'
14:47	7.53	24.3		4.45	999					
	7.98	27.2		4.83	170					
15:12										well dry @ intake

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38-08E06216.04	
Location: Riverview, MI		Field Personal: WEC	
Well ID: DMW-3	Cont/ Diameter: GS PVC 2"		Start Time:
Weather:	Date: 8/15/00		End Time:
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters

	Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
	Units	-log[H+]	°C/°F				%		ml/min	ft (BTOC)	
	T_{start} 16:15									5.44	intake at 24'
	16:26	7.09	20.3		5.63	44					
	16:30	6.94	17.8		5.68	69					.0225 l/min
	16:32	6.87	18.0		5.70	61					
	16:36	6.87	19.1		5.71	38					.0125 l/min
	16:41	6.83	20.0		5.71	1					
	16:53	7.04	22.4		5.72	1					
	16.59	6.97	23.3		5.72	1					
	18:00										stop sample
1/16	8:41									12.02'	intake @ 24'

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38-08E06216.04	
Location: Riverview, MI		Field Personal: WEC	
Well ID: P2-5	Cont/ Diameter: GS PVC 2"		Start Time:
Weather:	Date:		End Time:
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	Page 2 of 2

Field Monitoring Data and Paramters

	Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
	Units	-log[H+]	°C/°F				%		ml/min	ft (BTOC)	
1/14/00	Tstart 13:08	8.88	21.5		23.8	1					
	13:15	8.89	21.1		23.9	1					
	13:22	8.89	21.1		23.9	31					
	13:30	8.87	21.5		23.6	0					
	13:37	8.86	20.8		23.4	1					
	13:42	8.88	20.7		23.6	1					
	14:16										Dry @ intake
1/15/00	9:24									10.20	intake @ 10.5'
	10:40										well dry @ intake
1/16											

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF - Riverview		Project Number: 38-08E06216.04	
Location: Riverview Mi		Field Personal: WEL	
Well ID: P2-5	Cont/ Diameter: GS PVC 2"	Start Time:	
Weather:	Date: 8/10/00	End Time:	
Pump Type: Peristaltic		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C/°F				%		ml/min	ft (BTOC)	
T_{start}: 10:15									5:06'	intake @ 10.5
10:20	8.55	17.7		16.7	129					
10:22	8.57	16.9		17.0	127					
10:27	8.57	17.4		16.5	128					
10:33	8.58	17.8		13.8	129					.16 liter/min ↑
10:39	8.6	18.2		12.1	129					
10:46	8.62	18.1		11.2	129					
10:57	8.59	19.3		9.18	50					
11:06	8.62	18.7		11.2	119					
11:16	8.58	18.6		15.0	10					
11:27	8.58	18.6		15.6	52					
11:36	8.59	~~18.~~ 17.7		15.1	52					~1.5-2.5 gal
11:39	8.58	17.6		16.0	75					removed
T11 8:00									10.20	
1/4 12:43									9.20	intake @ 10.5
12:54	8.83	23.2		23.9	1					
13:00	8.88	23.9		21.5	0					

Low Flow Groundwater Sample Collection Log

General Information			
Project Name: BASF Riverview		Project Number: 38.08801216.04	
Location: Riverview, MI		Field Personal: WRC & Matt Abdallah	
Well ID: DMW-9	Cont/ Diameter: GS PVC 2"		Start Time:
Weather:	Date: 8/28/00		End Time:
Pump Type: Peristaltic Bladder		Tubing: 1/4"ID HDPE	

Field Monitoring Data and Paramters

Time	pH	Temp	DO	Cond.	Turbid.	TDS	ORP	Rate	DTW	General
Units	-log[H+]	°C/°F				%		ml/min	ft (BTOC)	TD 30.16
T_{start}:										
10:15									7.27	intake @ 22.2
10:39	5.03	16.0		3.81	25			450		
10:44	5.84	17.1		3.75	37			400		
10:49	5.98	15.4		3.25	38					
10:54	5.99	15.3		3.75	35			250		
10:59	6.01	16.5		3.76	35			250		
11:04	6.05	16.1		3.77	34			250		
11:05										Samples collected

Appendix D

Table 6
Field Hydraulic Conductivity Estimates - August and November 2000
BASF Property, Riverview Michigan

WELL #	TEST DATE FH	TEST DATE RH	TEST UNIT	ESTIMATED K (FT/MIN) FH	ESTIMATED K (FT/MIN) RH	GWEL-SCREEN	SCREENED IN
SMW1	8/24/00	8/24/00	W	NV	1.43 E-3	IN	SANDY FILL
IMW1	8/22/00	8/22/00	W	6.244 E-5	5.288 E-5	ABOVE	SILTY-CLAY, CLAY
SMW4	NP	8/28/00	U	NV	1.395 E-3	IN	SILTY FILL, SAND, SILTY CLAY
SMW4-99	8/22/00	8/22/00	P	5.028 E-4	4.099 E-4	ABOVE / CLOSE	SILTY-SANDY-FILL, CLAY
SMW5	8/22/00	8/22/00	W	NV	9.383 E-3	IN	FILL, SANDS, SOFT CLAY
SMW5-99	8/22/00	8/22/00	W	4.182 E-4	6.115 E-4	ABOVE	FILL, SILTY CLAY, STIFF CLAY
IMW5	8/21/00	8/21/00	P	1.572 E-4	1.283 E-4	ABOVE	FILL, SAND, SILTY CLAY, STIFF CLAY
SMW6	8/22/00	8/22/00	W	1.341 E-3	3.674 E-3	ABOVE	SANDY GRAVEL, FILL
SMW6-99	8/23/00	8/23/00	W	3.665 E-5	5.917 E-5	CLOSE	CLAY AND SAND
IMW6	8/22/00	8/22/00	P	1.352 E-3	1.433 E-3	ABOVE	SANDY GRAVEL, FILL
SMW7	8/23/00	8/23/00	P	1.987 E-4	2.239 E-4	ABOVE	SANDY FILL, CLAY FILL
SMW8	11/17/00	11/17/00	U	NV	NP DRY	IN	SILTY CLAY
SMW9	8/22/00	8/22/00	P	NV	1.174 E-2	IN	SANDY FILL
IMW9	8/22/00	8/22/00	W	4.769 E-4	4.507 E-4	ABOVE	SANDY FILL, CLAY AND SILT
DMW9	8/31/00	11/15/00	U/C	3.846 E-7	4.33 E-7	ABOVE	STIFF-V.SOFT CLAYS
SMW10	8/22/00	8/22/00	W	1.035 E-3	3.351 E-3	ABOVE	CONCRETE, GRAVEL, MISC FILL
IMW10	8/22/00	8/22/00	P	3.001 E-4	3.072 E-4	ABOVE	FILL, PEAT, SILTY CLAY
DMW10	11/15-16/00	11/16/00	C	3.005 E-8	2.812 E-7	ABOVE	STIFF-V.SOFT CLAYS
SMW11	8/23/00	8/23/00	P	NV	3.571 E-4	IN	SAND, FILL
IMW11	8/23/00	8/23/00	W	2.431 E-4	3.097 E-4	ABOVE	FILL, PEAT, SILTY CLAY
DMW11	11/15/00	11/15/00	C	1.655 E-7	5.112 E-7	ABOVE	HARD-SOFT, SILTY-CLAY
SMW12	NP	8/29/00	U	NV	1.529 E-5	IN	GRAVEL, SILT, SANDY-CLAY
IMW12	8/23/00	8/23/00	P	1.465 E-4	2.483 E-4	ABOVE	FILL AND ORGANICS
DMW12	11/15-16/00	11/16/00	C	2.854 E-7	3.172 E-7	ABOVE	V.STIFF-SOFT, SILTY-CLAY
SMW13	8/25/00	8/25/00	W	NV	1.694 E-3	IN	FILL, CLAYS, SILT
IMW13	8/24/00	8/24/00	W	1.103 E-4	1.116 E-4	ABOVE	SILT, SILTY-SAND,WOOD, SILTY-CLAY
DMW13	11/16/00	11/16/00	C	2.657 E-7	3.166 E-7	ABOVE	V.STIFF-V.SOFT, SILTY-CLAY
SMW14	8/23/00	8/23/00	P	NV	2.241 E-1	IN	GRAVEL, CONCRETE, SILTY-CLAY
SMW15	11/1600	11/16/00	C	NV	2.65 E-6	IN	FILL, SILTY-CLAY, SILT
SMW16	NP	8/29/00	U	NV	1.17 E-2	IN	SLAG, GRAVEL
SMW17	8/23/00	8/23/00	P	NV	2.729 E-3	IN	SILTY-CLAY, GRAVEL, SLAG, SILT, CLAY
SMW18	11/17/00	11/17/00	C	NV	3.156 E-5	IN	SILTY-GRAVEL, CLAY
SMW19	8/23/00	8/23/00	P	NV	5.045 E-4	IN / CLOSE	FILL, CLAY, SAND, SILTY-CLAY
SMW20	NP	8/25/00	P	NV	2.312 E-3	IN	FILL, SLAG, SILT
SMW21	8/25/00	8/25/00	P	NV	1.794 E-3	IN	FILL, CINDERS, CLAY, GRAVEL, SILTY-CLAY
SMW22	NP	8/24/00	P	NV	4.472 E-5	IN	FILL, CINDERS, SILTY CLAY
SMW23	NP	8/28/00	U	NV	1.528 E-2	IN	GRAVEL, SAND, SILT, CLAY, FILL
SMW24	8/24/00	8/24/00	P	NV	1.348 E-1	IN	SAND, GRAVEL
SMW25	8/24/00	8/24/00	P	NV	1.164 E-2	IN / CLOSE	FILL, PEAT, SILTY-FILL, CLAY
SMW26	8/30/00	11/16/00	U	6.377 E-6	NO	ABOVE	CLAYEY-SAND, SILT, SLAG, CLAY
SMW27	8/31/00	8/31/00	U	3.177 E-4	7.014 E-4	ABOVE	SLAG, CINDERS, SANDS, SILT
PZ1	8/24/00	8/24/00	P	1.186 E-5	1.661 E-5	ABOVE	GRAY-GREEN CLAY BELOW FILL

NOTES: FH - Falling head slug test.
RH - Rising head slug test.
K - Hydraulic conductivity.
NP - Not performed. / NP DRY-Not enough water to run test
NV - Test not valid. Static water level within screened interval.
NO - Solution could not be obtained from data.
Test unit - W = URS unit first series; U = URS unit second series; C = URS unit third series; P = Rental unit.

W:\BASF\Riverview\PhaseII\Report\SLUGTESTSUM1200NEW

Table 7
Field Hydraulic Conductivity Averages - August and November 2000
BASF Property, Riverview Michigan

Shallow Monitoring Wells

	ESTIMATED K (FT/MIN)	
WELL #	FH	RH
SMW1	NV	1.43E-03
SMW4	NV	1.40E-03
SMW4-99	5.03E-04	4.10E-04
SMW5	NV	9.38E-03
SMW5-99	4.18E-04	6.12E-04
SMW6	1.34E-03	3.67E-03
SMW6-99	3.67E-05	5.92E-05
SMW7	1.99E-04	2.24E-04
SMW8	NV	NO
SMW9	NV	1.17E-02
SMW10	1.04E-03	3.35E-03
SMW11	NV	3.57E-04
SMW12	NV	1.53E-05
SMW13	NV	1.69E-03
SMW14	NV	2.24E-01
SMW15	NV	2.65E-06
SMW16	NV	1.17E-02
SMW17	NV	2.73E-03
SMW18	NV	3.16E-05
SMW19	NV	5.05E-04
SMW20	NV	2.31E-03
SMW21	NV	1.79E-03
SMW22	NV	4.47E-05
SMW23	NV	1.53E-02
SMW24	NV	1.35E-01
SMW25	NV	1.16E-02
SMW26	6.38E-06	NO
SMW27	3.18E-04	7.01E-04
PZ1	1.19E-05	1.66E-05
Arithmetic Average	4.30E-04	1.63E-02

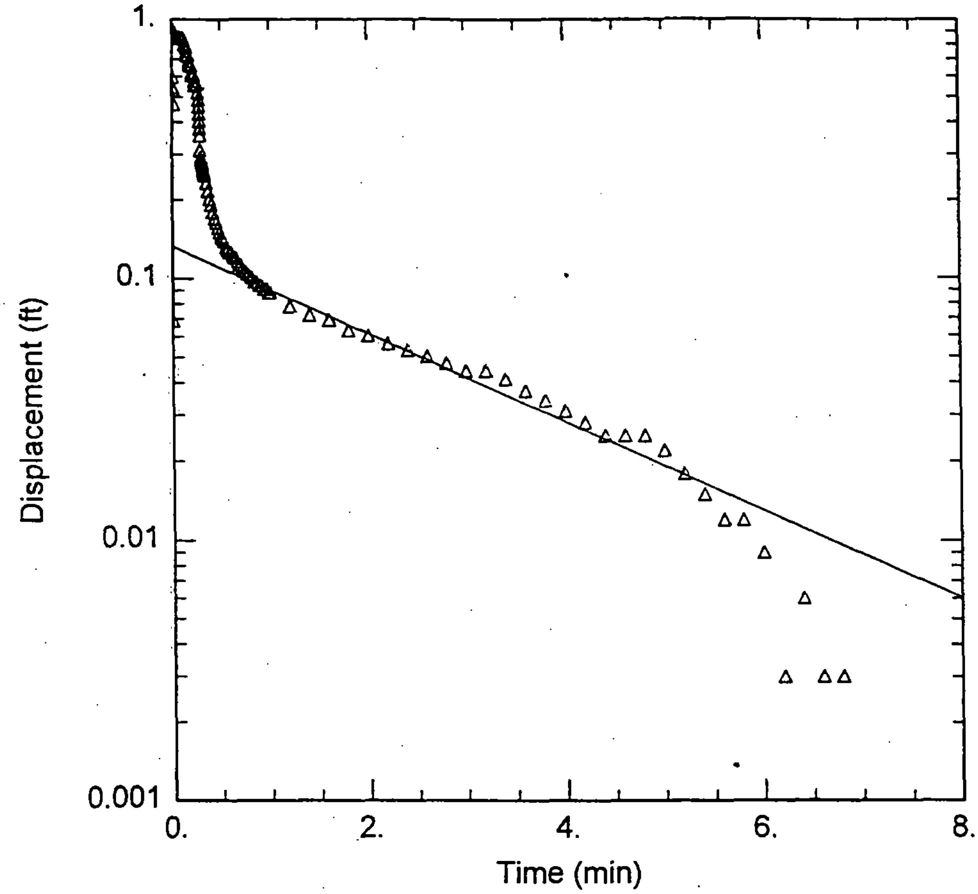
Intermediate Monitoring Wells

	ESTIMATED K (FT/MIN)	
WELL #	FH	RH
IMW1	6.24E-05	5.29E-05
IMW5	1.57E-04	1.28E-04
IMW6	1.35E-03	1.43E-03
IMW9	4.77E-04	4.51E-04
IMW10	3.00E-04	3.07E-04
IMW11	2.43E-04	3.10E-04
IMW12	1.47E-04	2.48E-04
IMW13	1.10E-04	1.12E-04
Arithmetic Average	3.56E-04	3.80E-04

Deep Monitoring Wells

	ESTIMATED K (FT/MIN)	
WELL #	FH	RH
DMW9	3.85E-07	4.33E-07
DMW10	3.01E-08	2.81E-07
DMW11	1.66E-07	5.11E-07
DMW12	2.85E-07	3.17E-07
DMW13	2.66E-07	3.17E-07
Arithmetic Average	2.26E-07	3.72E-07

NOTES:
FH - Falling head slug test.
RH - Rising head slug test.
K - Hydraulic conductivity.
NP - Not performed.
NV - Test not valid. Static water level within screened interval.
NO - Solution could not be obtained from data.



RISING HEAD SLUG TEST SMW1

Data Set: W:\BASF\Riverview\PhaseII\report\slug0800\smw1r.aqt
Date: 12/24/00 Time: 12:43:22

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: SMW1
Test Date: 08/24/00

AQUIFER DATA

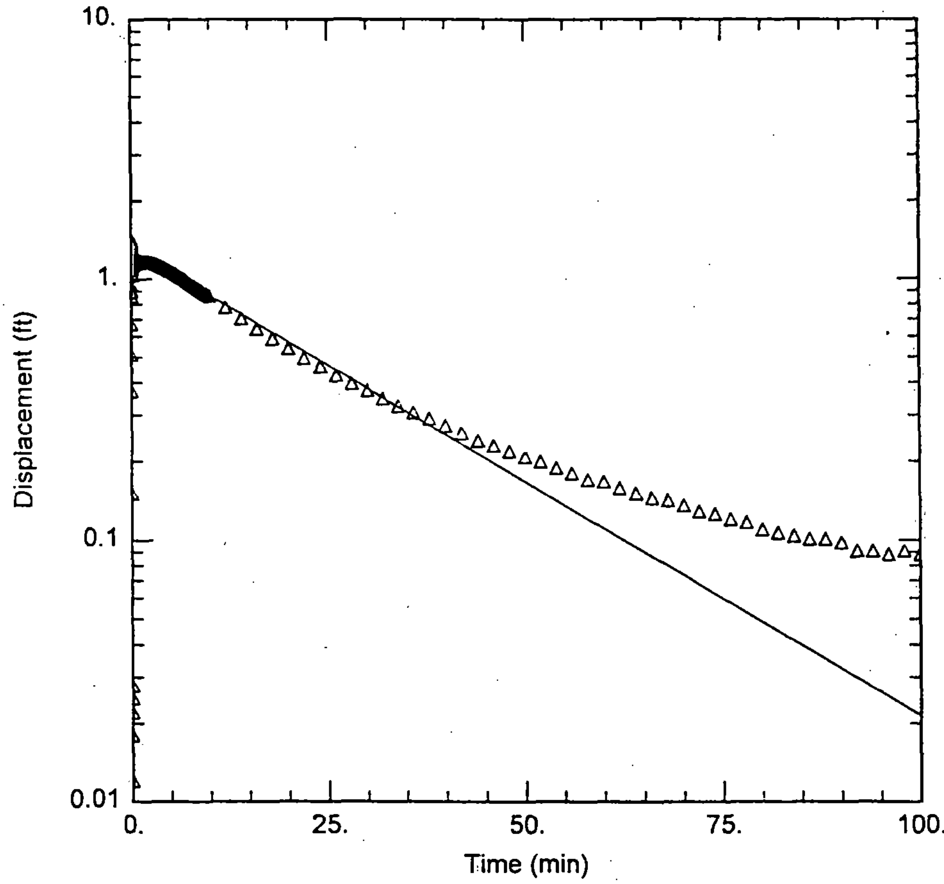
Saturated Thickness: 6.5 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (SMW1)

Initial Displacement: 0.912 ft
Casing Radius: 0.083 ft
Screen Length: 7. ft
Water Column Height: 5. ft
Wellbore Radius: 0.333 ft
Gravel Pack Porosity: 0.2

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.00143 ft/min
y0 = 0.1326 ft



FALLING HEAD SLUG TEST IMW1

Data Set: W:\BASF\Riverview\PhaseII\report\slug0800\imw1f.aqt
Date: 12/24/00 Time: 12:44:18

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: IMW1
Test Date: 08/22/00

AQUIFER DATA

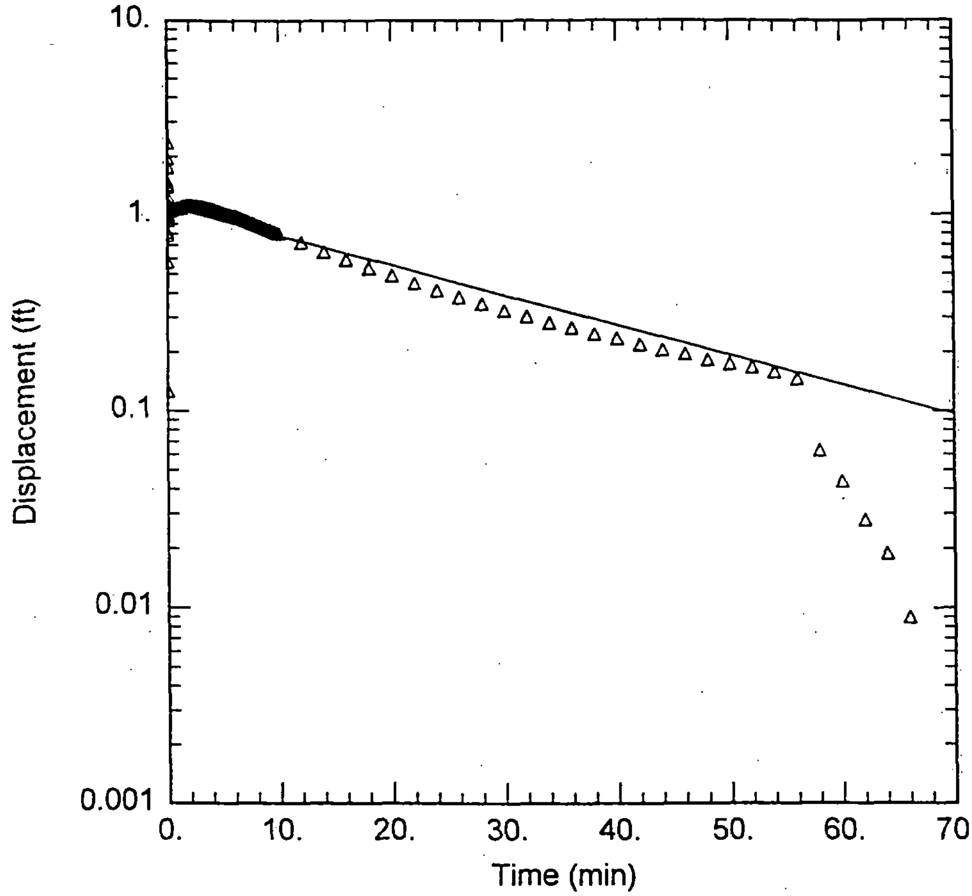
Saturated Thickness: 7.48 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (IMW1)

Initial Displacement: 1.42 ft Water Column Height: 7.48 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.333 ft
Screen Length: 5. ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 6.244E-05 ft/min y0 = 1.306 ft



RISING HEAD SLUG TEST IMW1

Data Set: W:\BASF\Riverview\PhaseII\report\slug0800\imw1r.aqt
Date: 12/24/00 Time: 12:45:11

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08e06216.00
Test Location: Riverview, MI
Test Well: IMW1
Test Date: 08/22/00

AQUIFER DATA

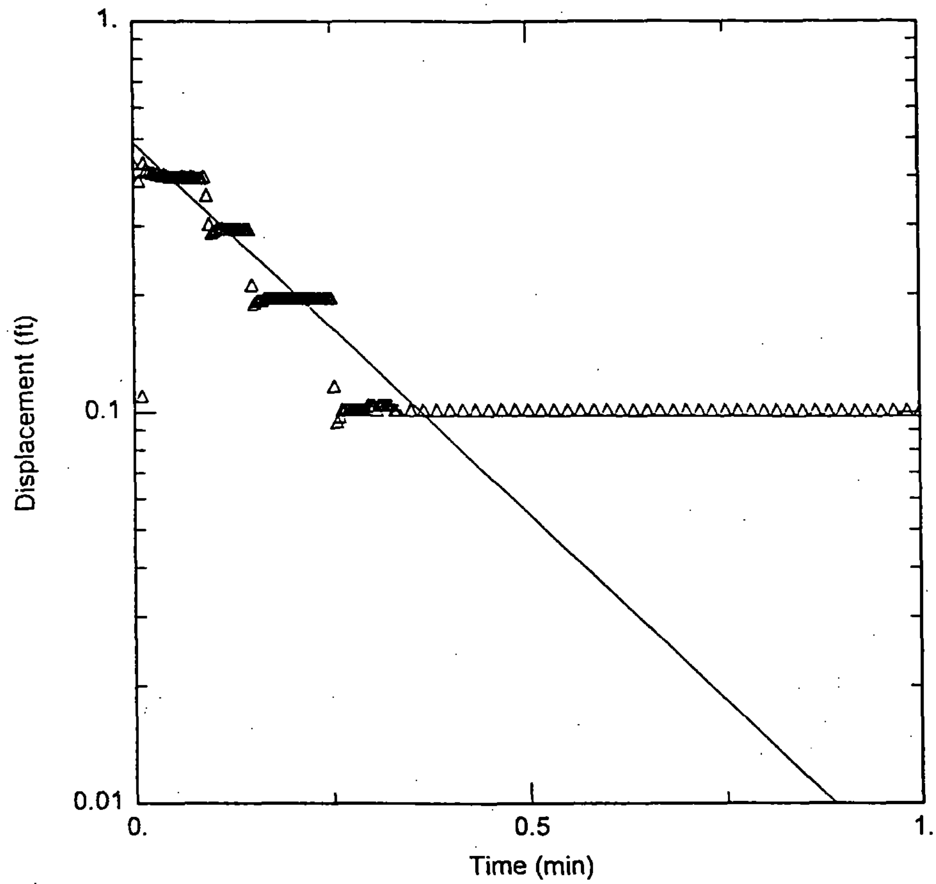
Saturated Thickness: 7.48 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (IMW1)

Initial Displacement: 2.353 ft
Casing Radius: 0.083 ft
Screen Length: 5. ft
Water Column Height: 7.48 ft
Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 5.288E-05 ft/min
y0 = 1.105 ft



RISING HEAD SLUG TEST SMW4

Data Set: W:\BASF\Riverview\PhaseII\report\uslug0800\smw4r.aqt
Date: 12/24/00 Time: 12:46:42

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: SMW4
Test Date: 08/28/00

AQUIFER DATA

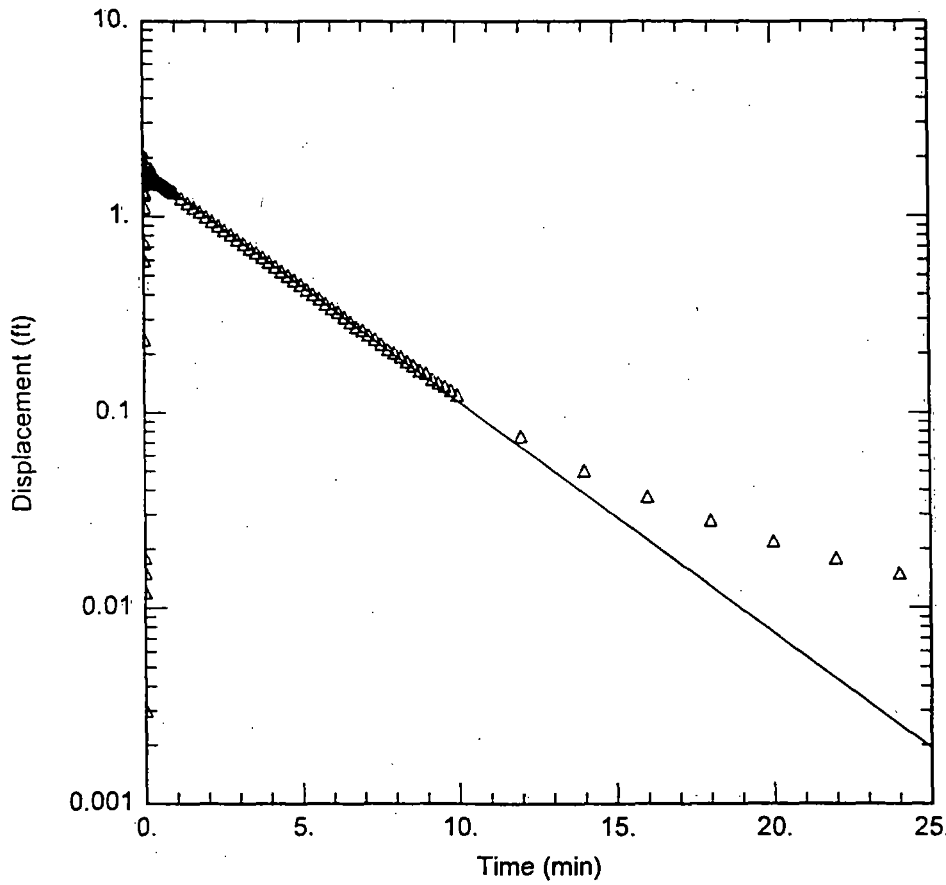
Saturated Thickness: 8.35 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (SMW4)

Initial Displacement: 0.435 ft Water Column Height: 7.85 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.333 ft
Screen Length: 10. ft Gravel Pack Porosity: 0.2

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 0.01395 ft/min y0 = 0.4906 ft



FALLING HEAD SLUG TEST SMW4-99

Data Set: W:\BASF\Riverview\PhaseII\report\pslug0800\smw4-99f.aqt
Date: 12/24/00 Time: 12:47:33

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: SMW4-99
Test Date: 08/22/00

AQUIFER DATA

Saturated Thickness: 3.21 ft
Anisotropy Ratio (Kz/Kr): 1.

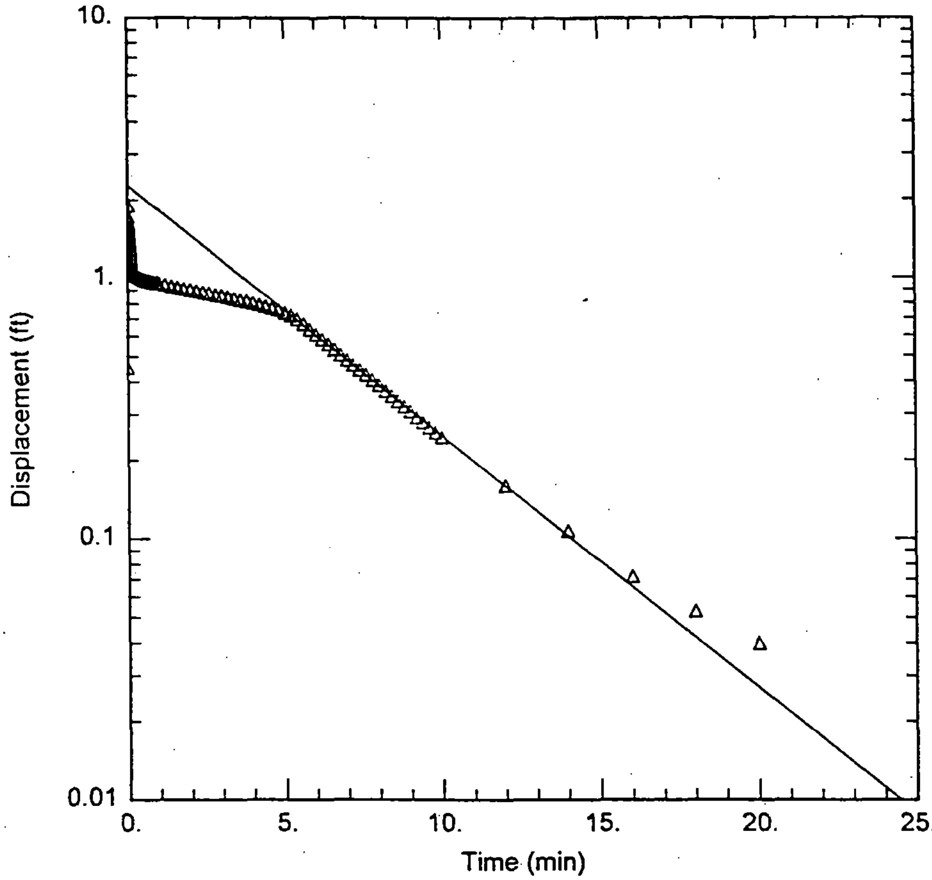
WELL DATA (SMW4-99)

Initial Displacement: 1.99 ft
Casing Radius: 0.083 ft
Screen Length: 3. ft
Water Column Height: 3.21 ft
Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.0005028 ft/min
y0 = 1.733 ft



RISING HEAD SLUG TEST SMW4-99

Data Set: W:\BASF\Riverview\PhaseII\report\pslug0800\smw4-99r.aqt
Date: 12/24/00 Time: 12:48:10

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: SMW4-99
Test Date: 08/22/00

AQUIFER DATA

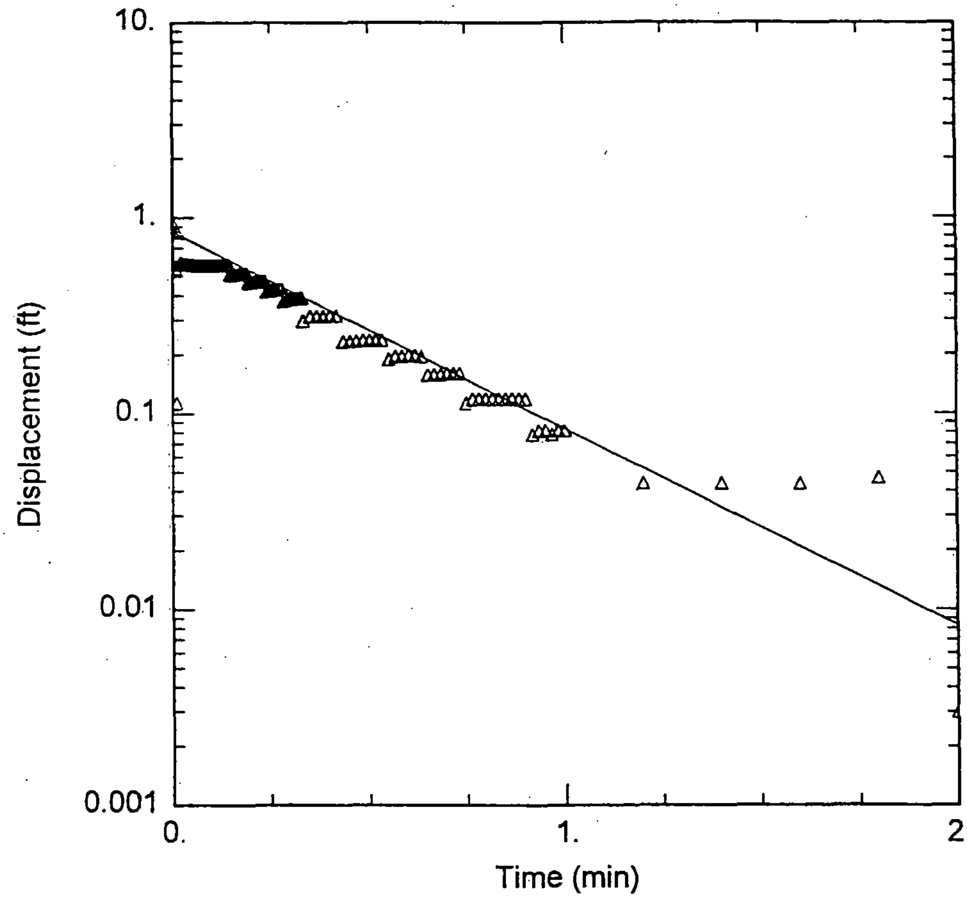
Saturated Thickness: 3.21 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (SMW4-99)

Initial Displacement: 1.91 ft
Water Column Height: 3.21 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Screen Length: 3. ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0004099 ft/min
y0 = 2.284 ft



RISING HEAD SLUG TEST SMW5

Data Set: W:\BASF\Riverview\PhaseII\report\slug0800\smw5r.aqt
Date: 12/24/00 Time: 12:50:18

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: SMW5
Test Date: 08/21/00

AQUIFER DATA

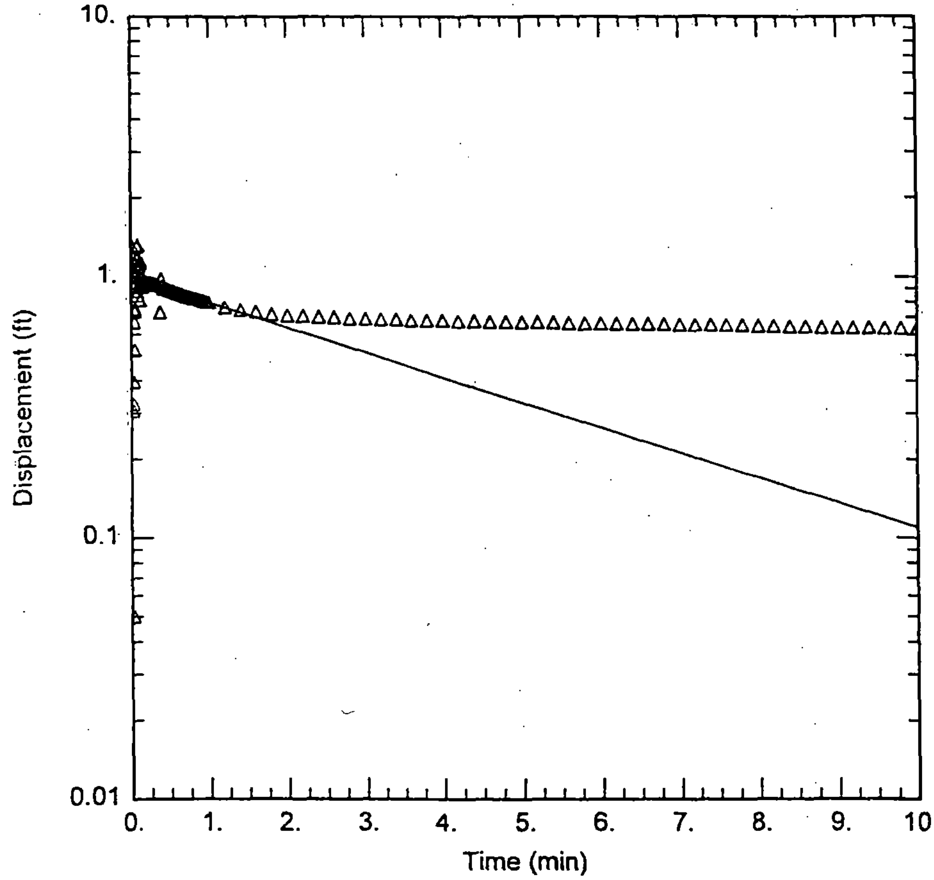
Saturated Thickness: 9.55 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (SMW5)

Initial Displacement: 0.94 ft
Casing Radius: 0.083 ft
Screen Length: 6. ft
Water Column Height: 5.02 ft
Wellbore Radius: 0.333 ft
Gravel Pack Porosity: 0.2

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.009383 ft/min
y0 = 0.8476 ft



FALLING HEAD SLUG TEST SMW5-99

Data Set: W:\BASF\Riverview\PhaseII\report\slug0800\smw5-99f.aqt
Date: 12/24/00 Time: 12:51:17

PROJECT INFORMATION

Company: URS
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: SMW5-99
Test Date: 08/22/00

AQUIFER DATA

Saturated Thickness: 3.84 ft Anisotropy Ratio (Kz/Kr): 1.

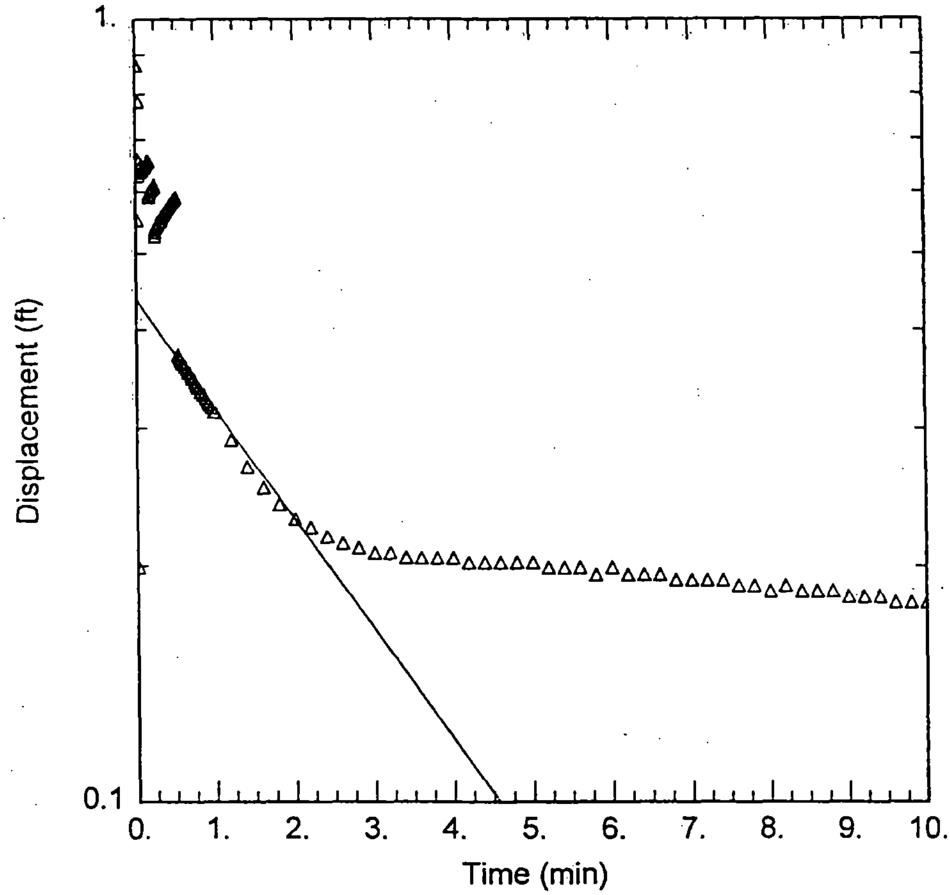
WELL DATA (SMW5-99)

Initial Displacement: 1.317 ft
Casing Radius: 0.084 ft
Screen Length: 3.2 ft
Water Column Height: 3.84 ft
Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0004182 ft/min y0 = 0.9911 ft



RISING HEAD SLUG TEST SMW5-99

Data Set: W:\BASF\Riverview\PhaseII\report\slug0800\smw5-99r.aqt
Date: 12/24/00 Time: 12:52:34

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: SMW5-99
Test Date: 08/22/00

AQUIFER DATA

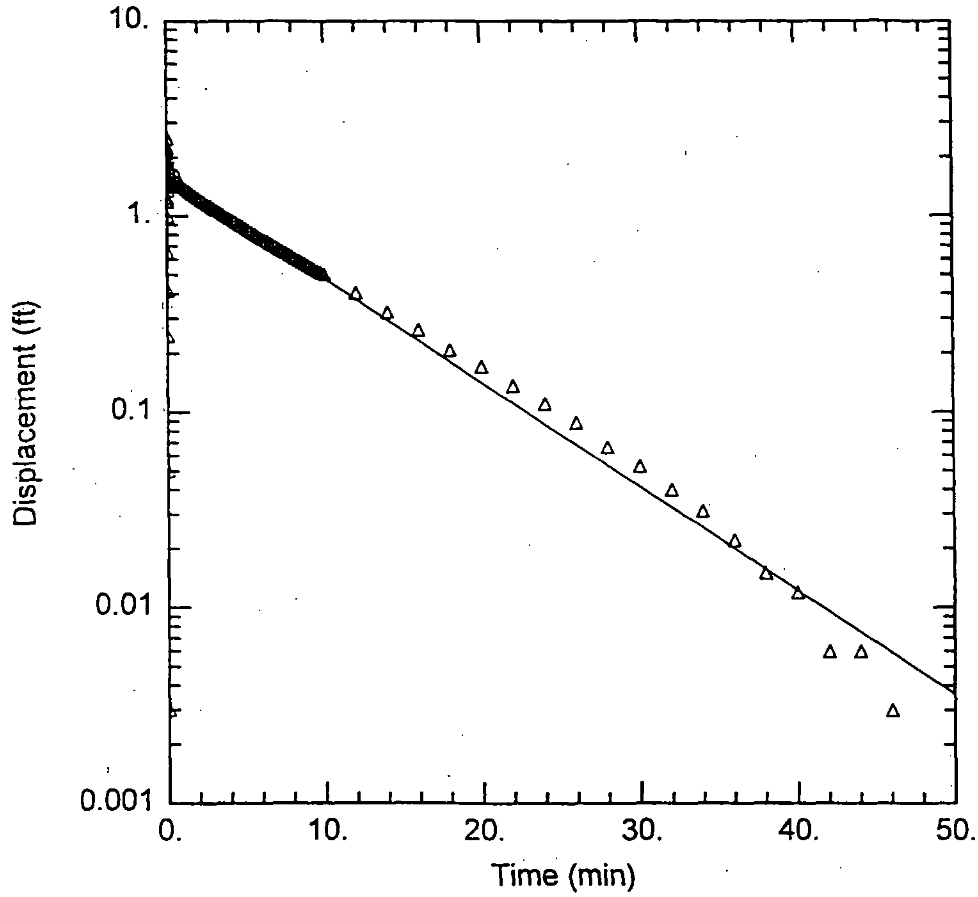
Saturated Thickness: 3.84 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (SMW5-99)

Initial Displacement: 0.871 ft
Water Column Height: 3.84 ft
Casing Radius: 0.084 ft
Wellbore Radius: 0.333 ft
Screen Length: 3.2 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0006115 ft/min
y0 = 0.437 ft



FALLING HEAD SLUG TEST IMW5

Data Set: W:\BASF\Riverview\PhaseII\report\pslug0800\imw5f.aqt
Date: 12/24/00 Time: 12:53:23

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview
Test Well: IMW5
Test Date: 08/21/00

AQUIFER DATA

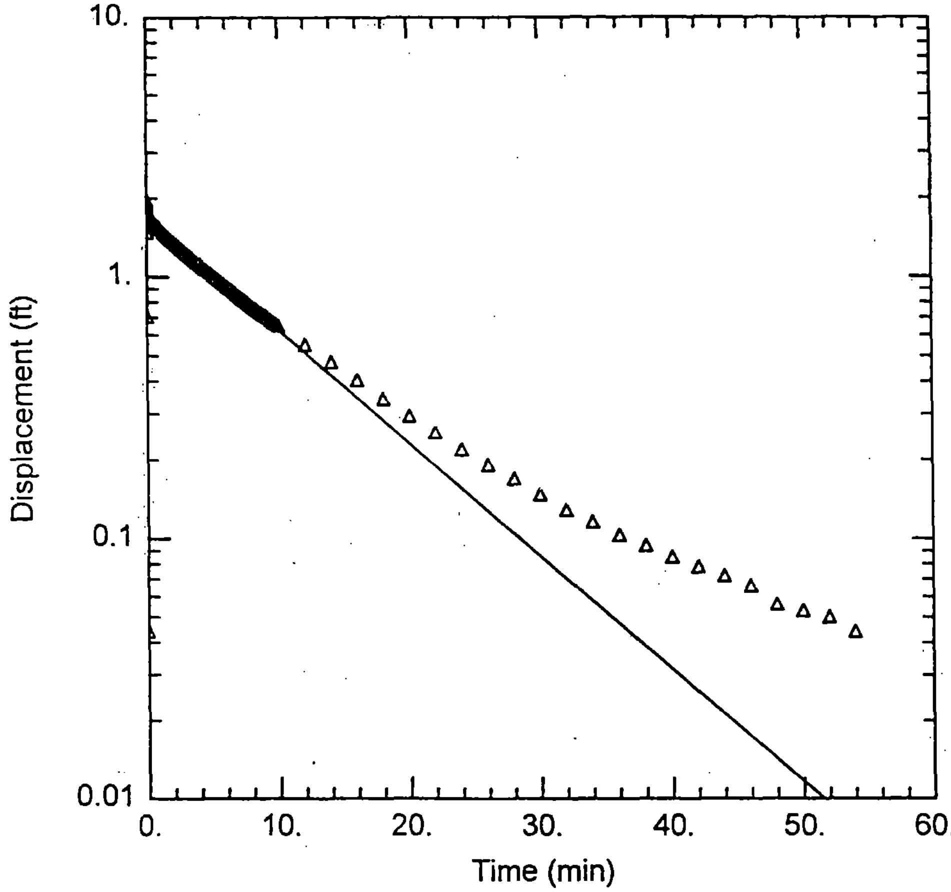
Saturated Thickness: 9.61 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (IMW5)

Initial Displacement: 2.507 ft
Casing Radius: 0.083 ft
Screen Length: 6.5 ft
Water Column Height: 9.61 ft
Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0001572 ft/min
y0 = 1.62 ft



RISING HEAD SLUG TEST IMW5

Data Set: W:\BASF\Riverview\PhaseII\report\pslug0800\imw5r.aqt
Date: 12/24/00 Time: 12:53:55

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview
Test Well: IMW5
Test Date: 08/21/00

AQUIFER DATA

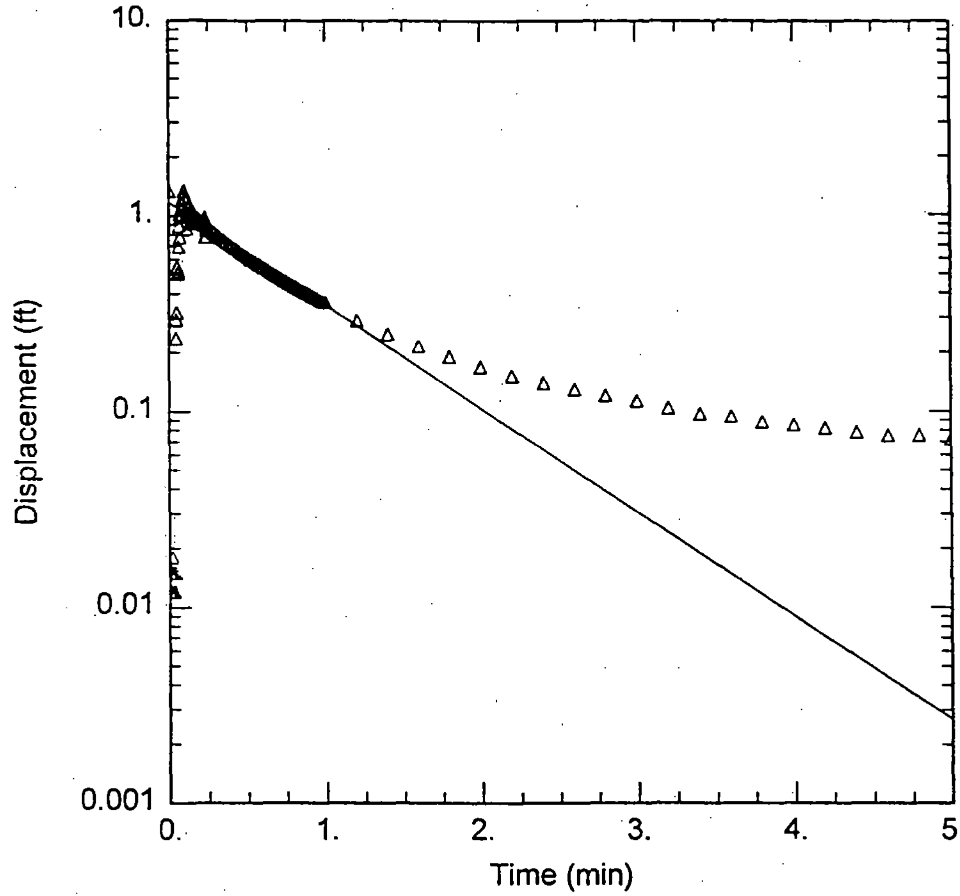
Saturated Thickness: 9.61 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (IMW5)

Initial Displacement: 1.958 ft Water Column Height: 9.61 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.333 ft
Screen Length: 6.5 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 0.0001283 ft/min y0 = 1.701 ft



FALLING HEAD SLUG TEST SMW6

Data Set: W:\BASF\Riverview\PhaseII\report\slug0800\smw6f.aqt
Date: 12/24/00 Time: 12:54:36

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E0626.00
Test Location: Riverview, MI
Test Well: SMW6
Test Date: 08/22/00

AQUIFER DATA

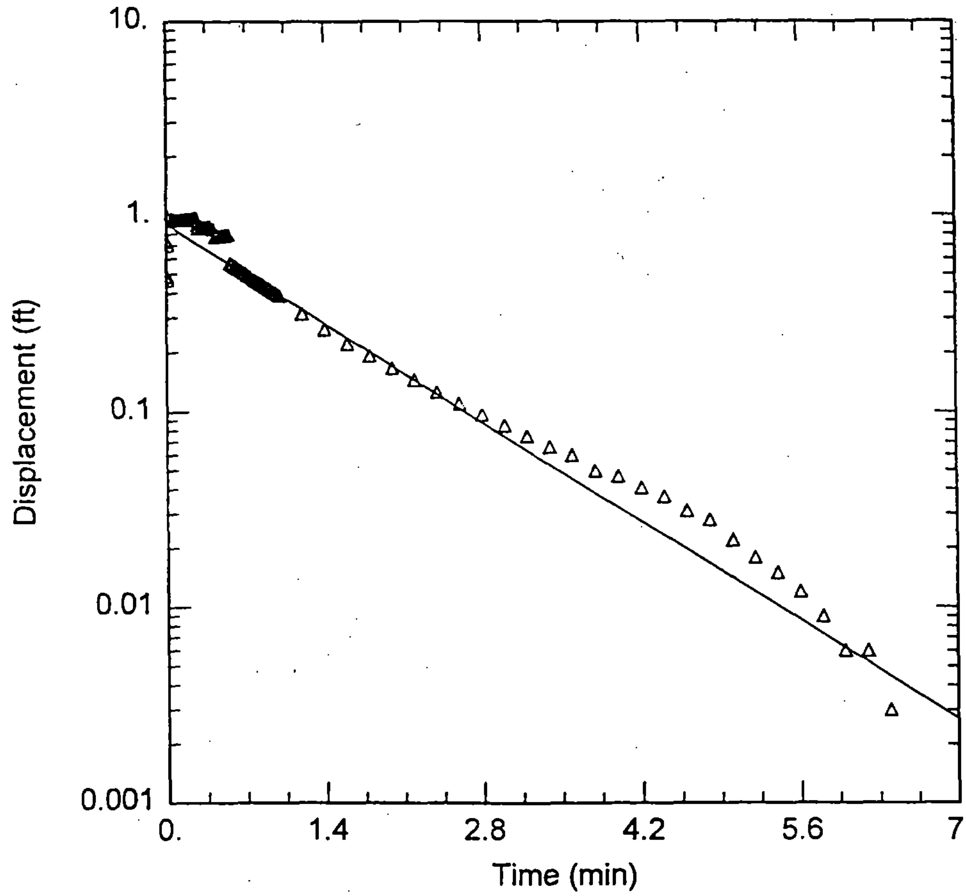
Saturated Thickness: 10.5 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (SMW6)

Initial Displacement: 1.346 ft
Water Column Height: 5.5 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Screen Length: 5.5 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.001341 ft/min
y0 = 1.177 ft



RISING HEAD SLUG TEST SMW6

Data Set: W:\BASF\Riverview\PhaseII\report\slug0800\smw6r.aqt
Date: 12/24/00 Time: 12:56:08

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview
Test Well: SMW6
Test Date: 08/22/00

AQUIFER DATA

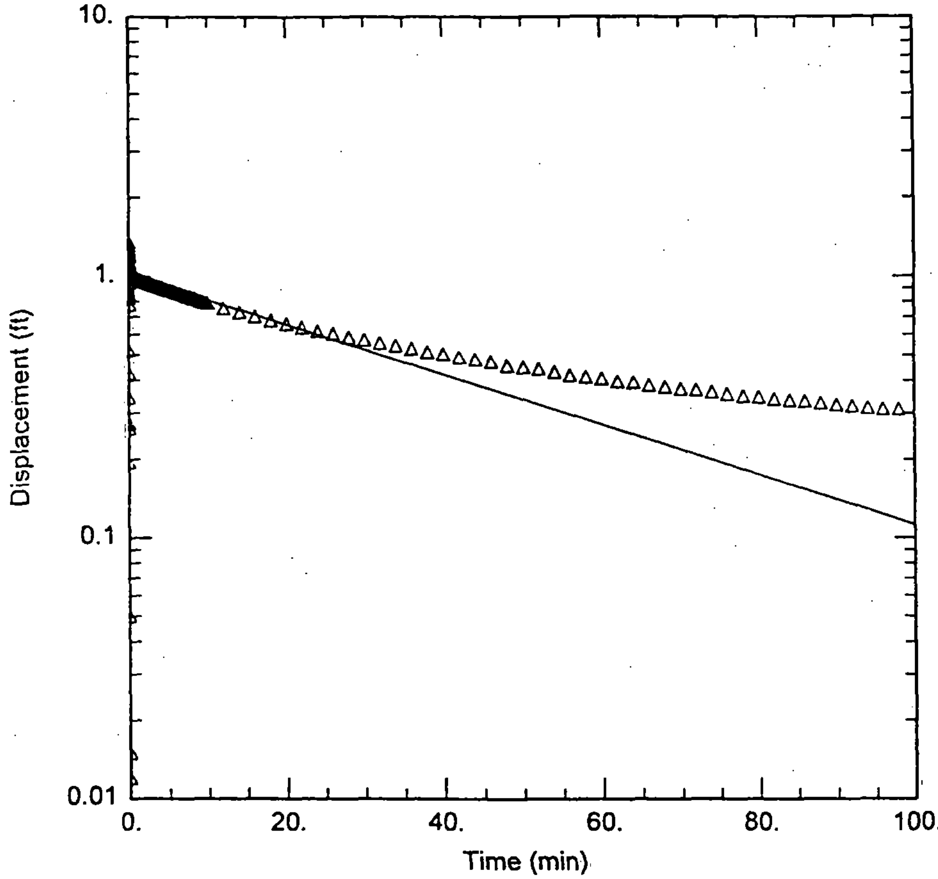
Saturated Thickness: 10.5 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (SMW6)

Initial Displacement: 0.988 ft
Water Column Height: 5.5 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Screen Length: 5.5 ft
Gravel Pack Porosity: 0.2

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.003674 ft/min
y0 = 0.8981 ft



FALLING HEAD SLUG TEST SMW6-99

Data Set: W:\BASF\Riverview\PhaseII\report\slug0800\smw6-99f.aqt
Date: 12/24/00 Time: 12:58:19

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08e06216.00
Test Location: Riverview, MI
Test Well: SMW6-99
Test Date: 08/23/00

AQUIFER DATA

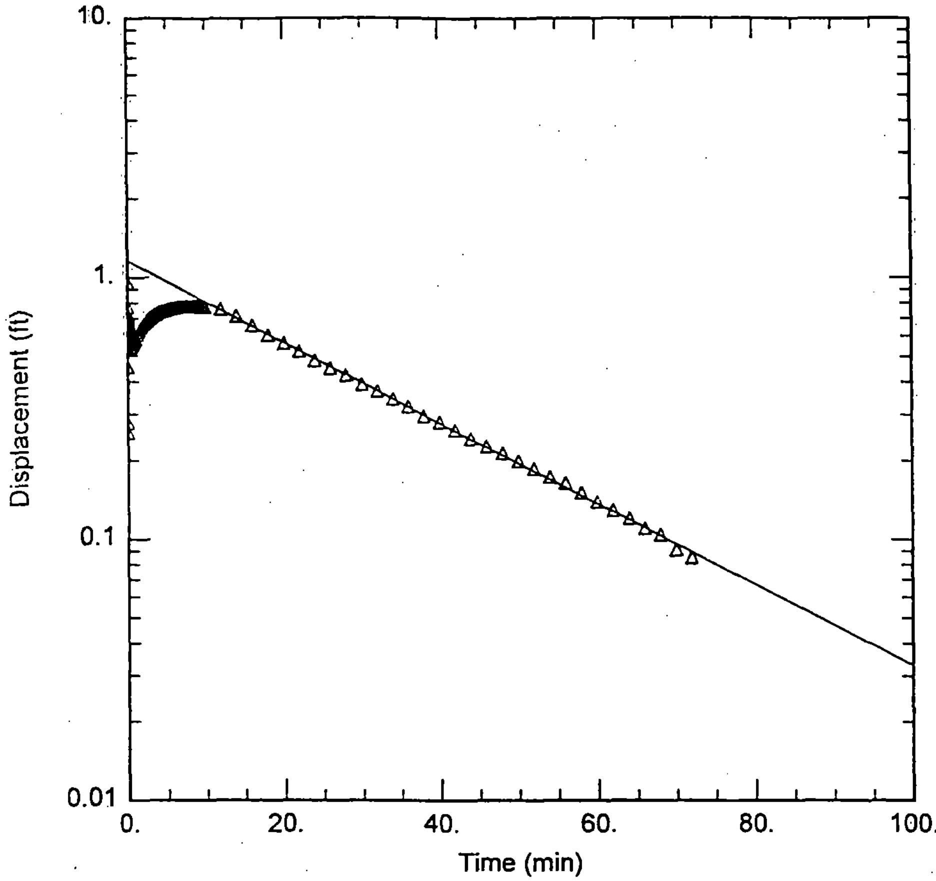
Saturated Thickness: 4.25 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (SMW6-99)

Initial Displacement: 1.349 ft
Casing Radius: 0.083 ft
Screen Length: 3.75 ft
Water Column Height: 4.25 ft
Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 3.665E-05 ft/min
y0 = 1.015 ft



RISING HEAD SLUG TEST SMW6-99

Data Set: W:\BASF\Riverview\PhaseII\report\slug0800\smw6-99r.aqt
Date: 12/24/00 Time: 12:58:46

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08e06216.00
Test Location: Riverview, MI
Test Well: SMW6-99
Test Date: 08/23/00

AQUIFER DATA

Saturated Thickness: 4.25 ft
Anisotropy Ratio (Kz/Kr): 1.

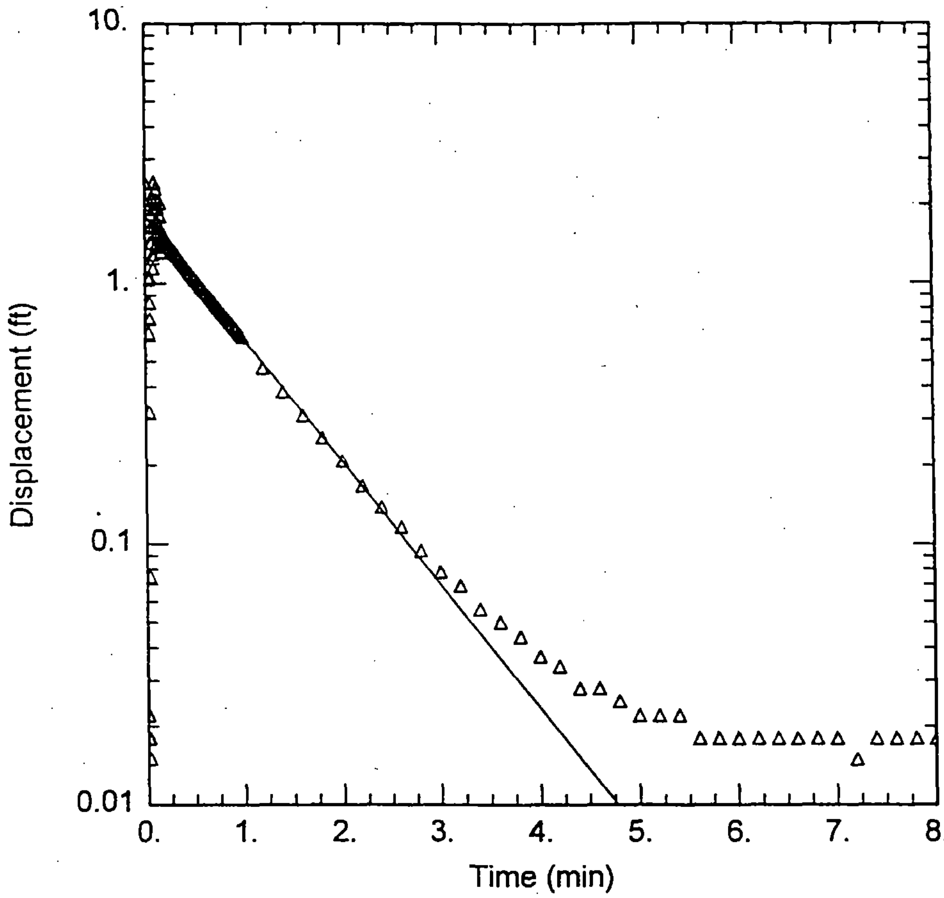
WELL DATA (SMW6-99)

Initial Displacement: 0.95 ft
Water Column Height: 4.25 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Screen Length: 3.75 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 5.917E-05 ft/min
y0 = 1.154 ft



FALLING HEAD SLUG TEST IMW6

Data Set: W:\BASF\Riverview\PhaseII\report\pslug0800\imw6f.aqt
Date: 12/24/00 Time: 12:59:24

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: IMW6
Test Date: 08/22/00

AQUIFER DATA

Saturated Thickness: 10.86 ft Anisotropy Ratio (Kz/Kr): 1.

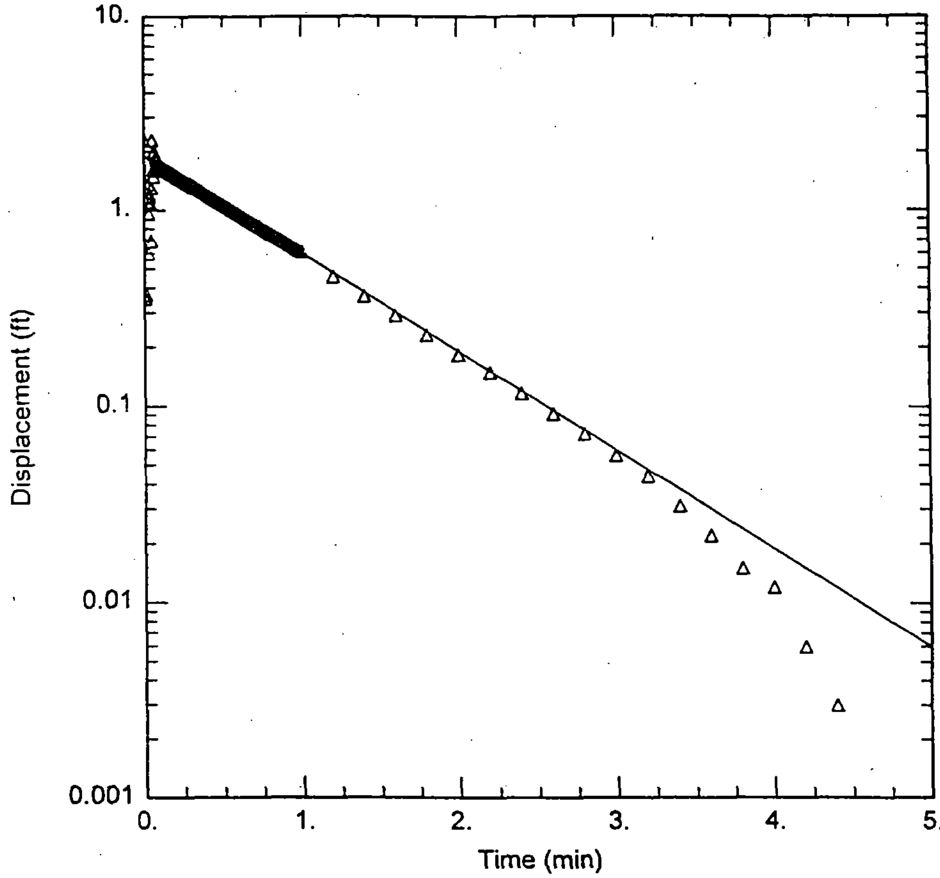
WELL DATA (IMW6)

Initial Displacement: 2.45 ft Water Column Height: 10.86 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.333 ft
Screen Length: 7. ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.001352 ft/min y0 = 1.827 ft



RISING HEAD SLUG TEST IMW6

Data Set: W:\BASF\Riverview\PhaseII\report\pslug0800\imw6r.aqt
Date: 12/24/00 Time: 13:00:00

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: IMW6
Test Date: 08/22/00

AQUIFER DATA

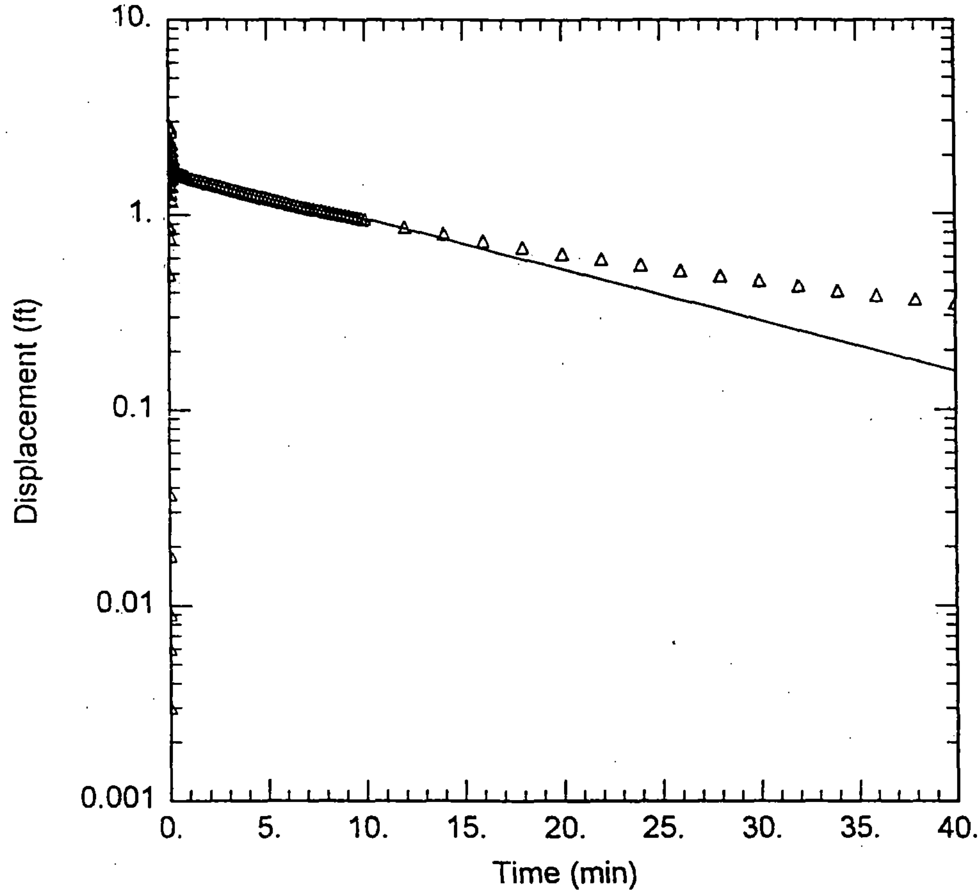
Saturated Thickness: 10.86 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (IMW6)

Initial Displacement: 2.291 ft
Casing Radius: 0.083 ft
Screen Length: 7. ft
Water Column Height: 10.86 ft
Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.001433 ft/min
y0 = 1.912 ft



FALLING HEAD SLUG TEST SMW7

Data Set: W:\BASF\Riverview\PhaseII\report\pslug0800\smw7f.aqt
Date: 12/24/00 Time: 13:00:36

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: SMW7
Test Date: 08/23/00

AQUIFER DATA

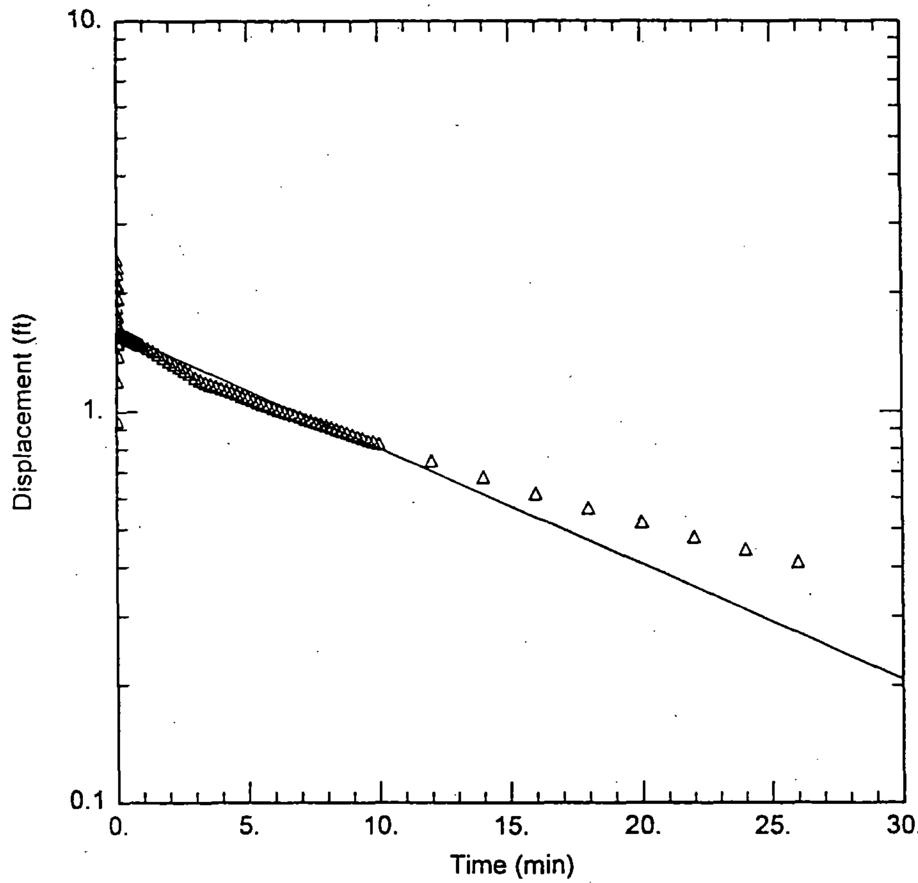
Saturated Thickness: 7.18 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (SMW7)

Initial Displacement: 2.811 ft Water Column Height: 7.21 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.333 ft
Screen Length: 2. ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 0.0001987 ft/min y0 = 1.74 ft



RISING HEAD SLUG TEST SMW7

Data Set: W:\BASF\Riverview\PhaseII\report\pslug0800\smw7r.aqt
Date: 12/24/00 Time: 13:01:33

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: SMW7
Test Date: 08/23/00

AQUIFER DATA

Saturated Thickness: 7.18 ft Anisotropy Ratio (Kz/Kr): 1.

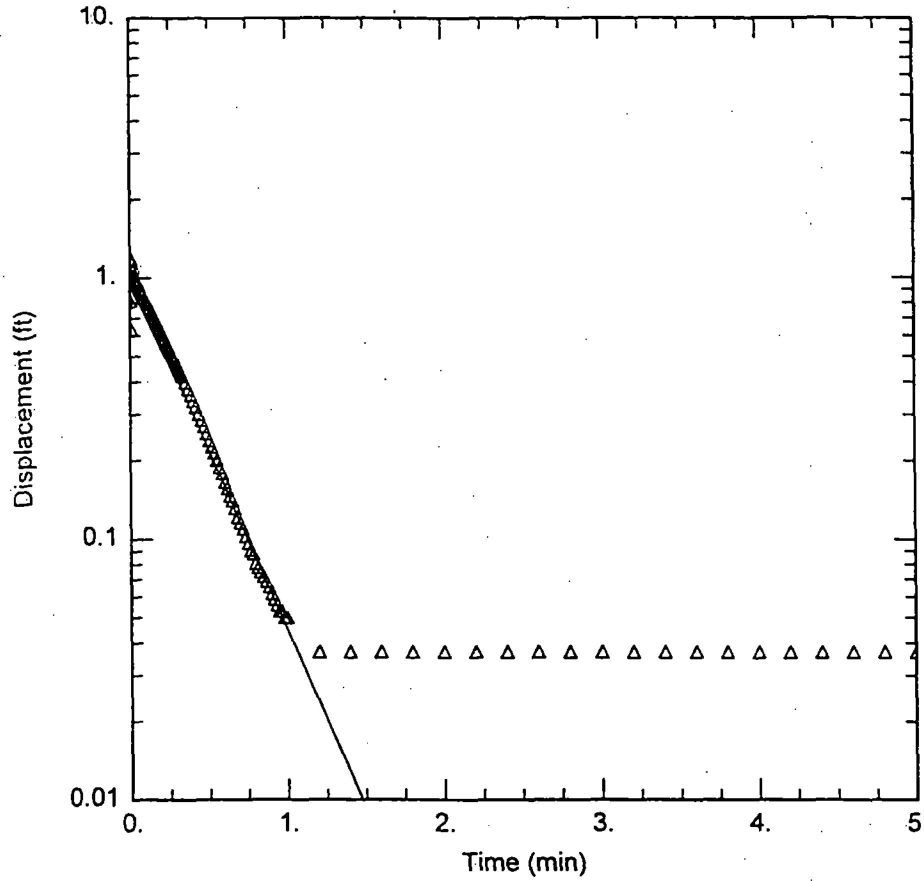
WELL DATA (SMW7)

Initial Displacement: 2.441 ft Water Column Height: 7.18 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.333 ft
Screen Length: 2. ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0002239 ft/min y0 = 1.59 ft



RISING HEAD SLUG TEST SMW9

Data Set: W:\BASF\Riverview\PhaseII\report\pslug0800\smw9r.aqt
Date: 12/24/00 Time: 13:02:48

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: RIverview, MI
Test Well: SMW9
Test Date: 08/22/00

AQUIFER DATA

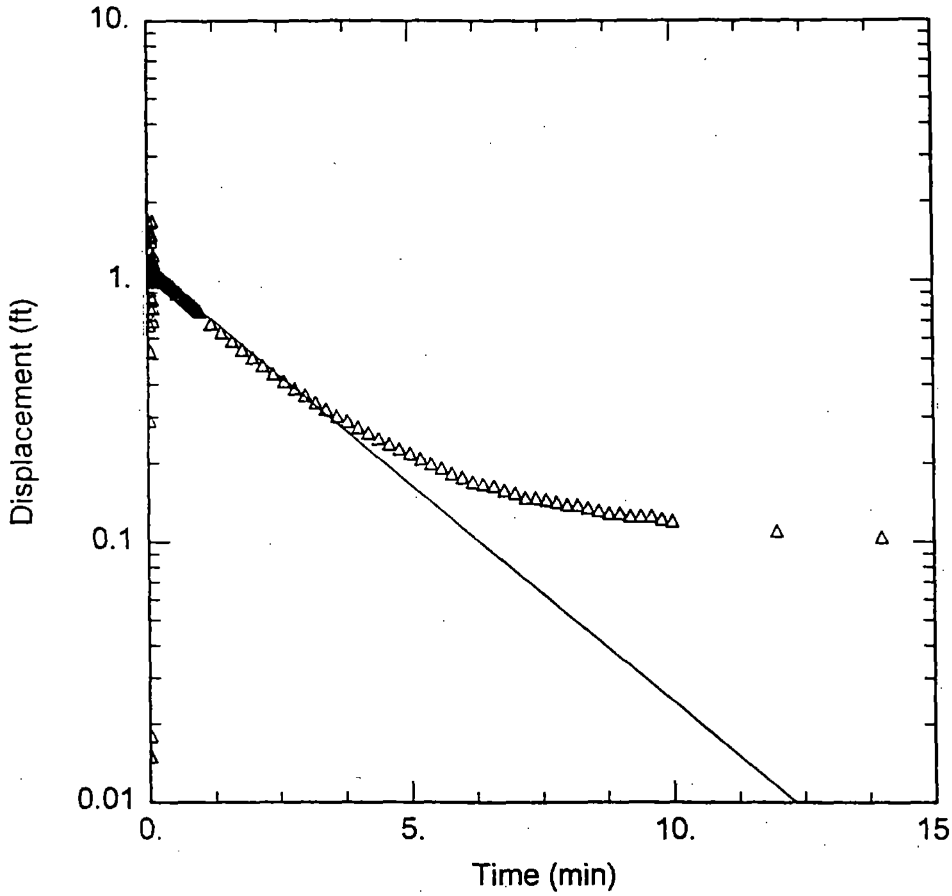
Saturated Thickness: 7.91 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (SMW9)

Initial Displacement: 1.173 ft
Water Column Height: 3.66 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Screen Length: 6. ft
Gravel Pack Porosity: 0.2

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.01174 ft/min
y0 = 1.059 ft



FALLING HEAD SLUG TEST IMW9

Data Set: W:\BASF\Riverview\PhaseII\report\slug0800\imw9f.aqt
Date: 12/24/00 Time: 13:03:44

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: IMW9
Test Date: 08/22/00

AQUIFER DATA

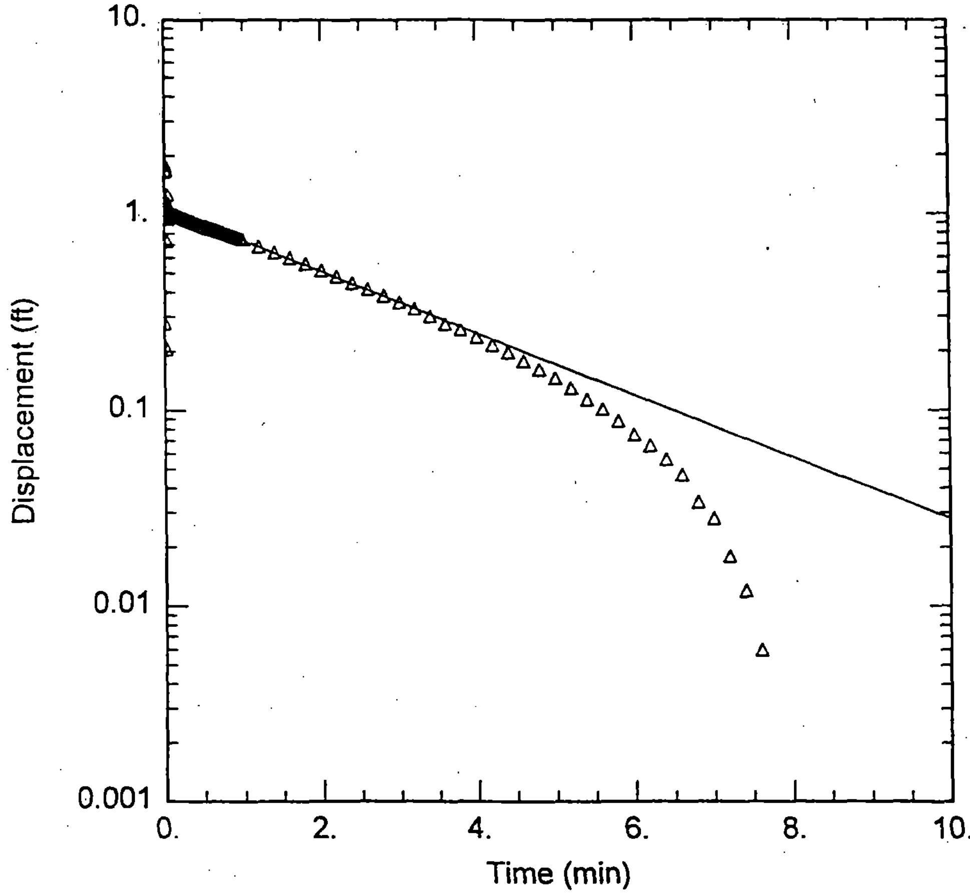
Saturated Thickness: 8.33 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (IMW9)

Initial Displacement: 1.692 ft
Casing Radius: 0.083 ft
Screen Length: 6.5 ft
Water Column Height: 8.33 ft
Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0004769 ft/min
y0 = 1.132 ft



RISING HEAD SLUG TEST IMW9

Data Set: W:\BASF\Riverview\PhaseII\report\slug0800\imw9r.aqt
Date: 12/24/00 Time: 13:04:25

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: IMW9
Test Date: 08/22/00

AQUIFER DATA

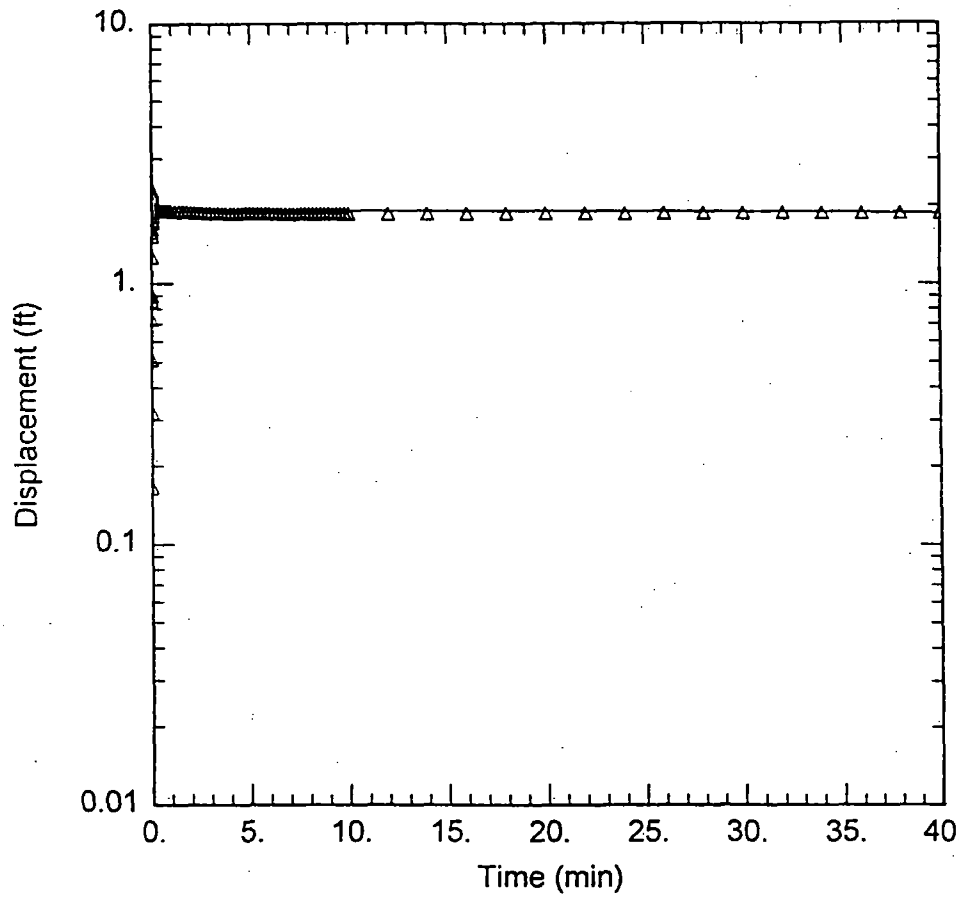
Saturated Thickness: 8.33 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (IMW9)

Initial Displacement: 1.801 ft
Casing Radius: 0.083 ft
Screen Length: 6.5 ft
Water Column Height: 8.33 ft
Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0004507 ft/min
y0 = 1.052 ft



FALLING HEAD SLUG TEST DMW9

Data Set: W:\BASF\Riverview\PhaseII\report\uslug0800\dmw9f.aqt
Date: 12/24/00 Time: 13:05:17

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: DMW9
Test Date: 08/31/00

AQUIFER DATA

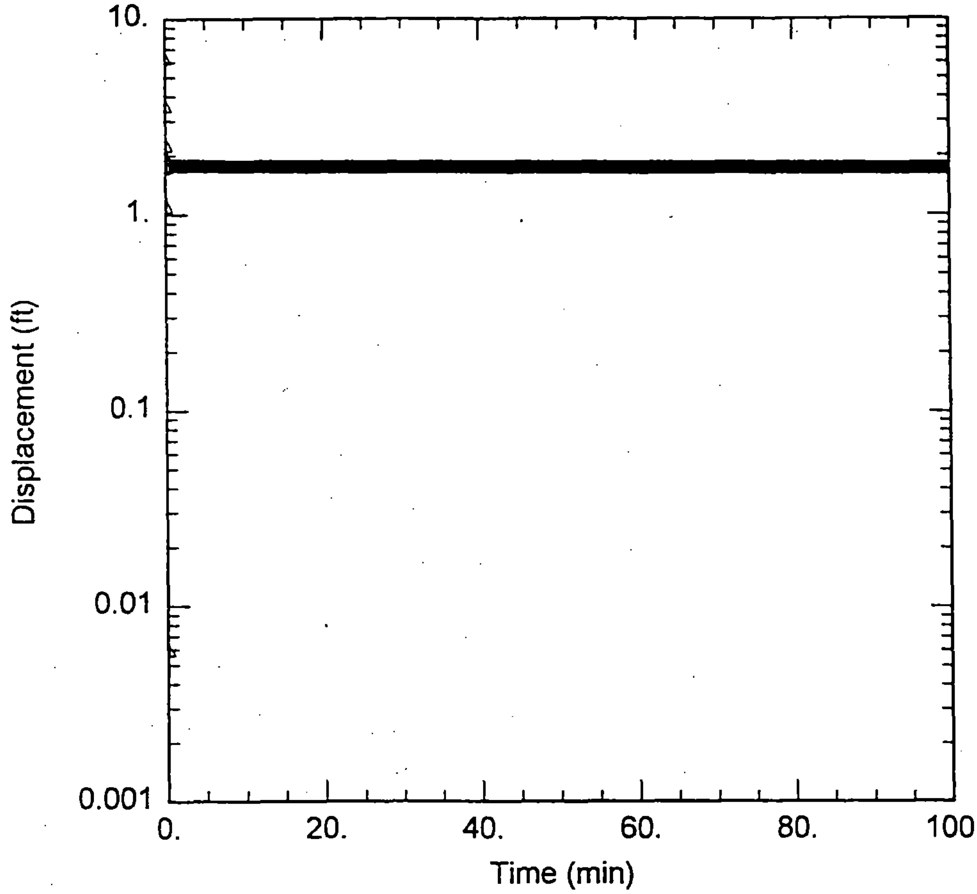
Saturated Thickness: 26. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (DMW9)

Initial Displacement: 2.249 ft
Casing Radius: 0.083 ft
Screen Length: 7. ft
Water Column Height: 14. ft
Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 3.846E-07 ft/min
y0 = 1.888 ft



RISING HEAD SLUG TEST DMW9

Data Set: W:\BASF\Riverview\PhaseII\report\slug1100\DMW9rh.aqt
Date: 12/24/00 Time: 13:06:02

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: DMW9
Test Date: 11/15/00

AQUIFER DATA

Saturated Thickness: 32.72 ft Anisotropy Ratio (Kz/Kr): 1.

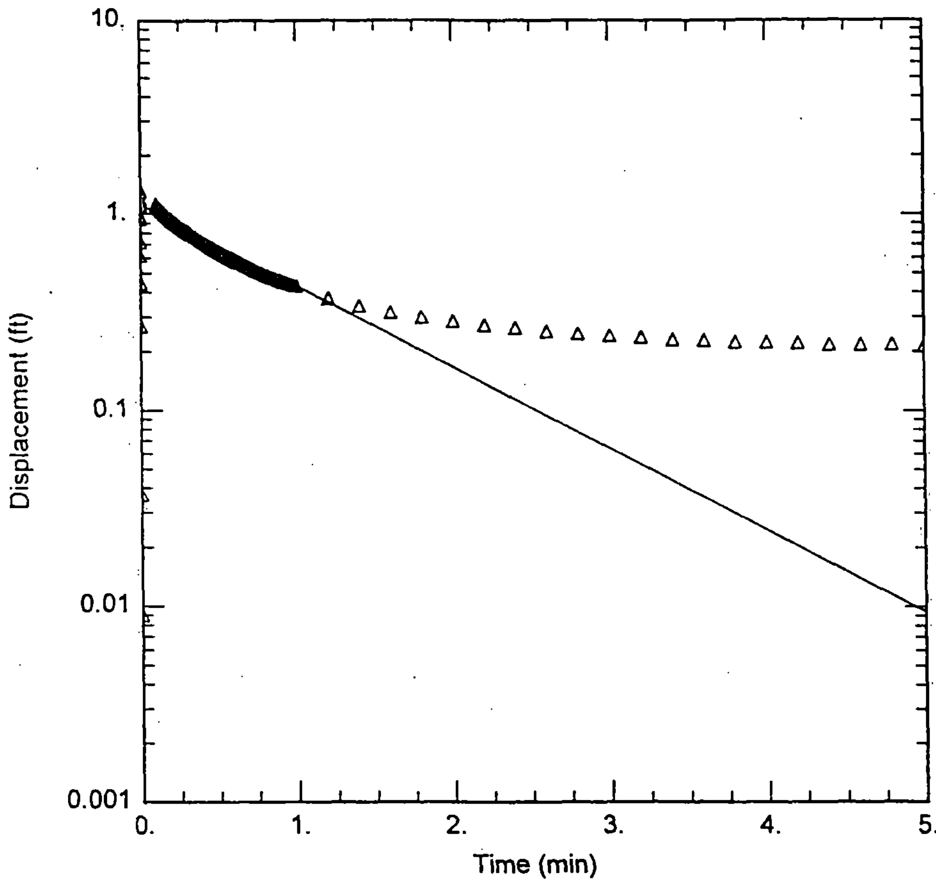
WELL DATA (DMW9)

Initial Displacement: 6.303 ft Water Column Height: 20.72 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.333 ft
Screen Length: 7. ft

SOLUTION

Aquifer Model: Confined Solution Method: Bouwer-Rice

K = 4.33E-07 ft/min y0 = 1.771 ft



FALLING HEAD SLUG TEST SMW10

Data Set: W:\BASF\Riverview\PhaseII\report\slug0800\smw10f.aqt
Date: 12/24/00 Time: 13:07:44

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview
Test Well: SMW10
Test Date: 08/22/00

AQUIFER DATA

Saturated Thickness: 10.5 ft Anisotropy Ratio (Kz/Kr): 1.

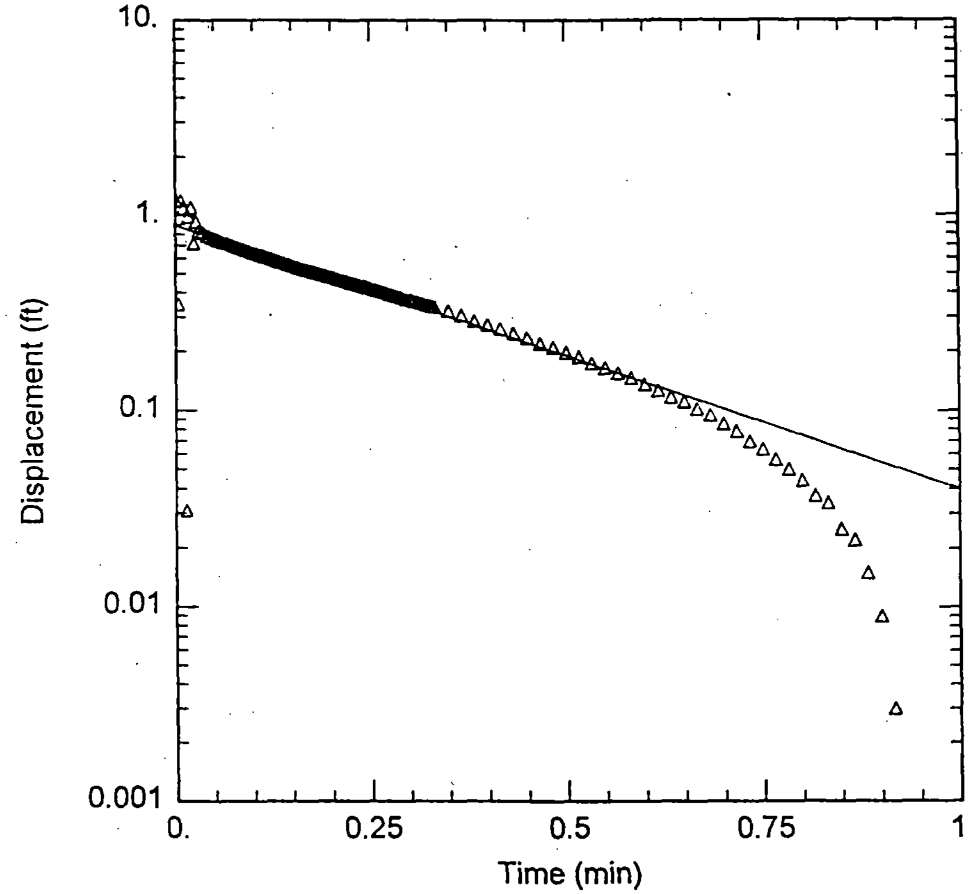
WELL DATA (SMW10)

Initial Displacement: 1.318 ft
Casing Radius: 0.083 ft
Screen Length: 6. ft
Water Column Height: 6.5 ft
Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.001035 ft/min y0 = 1.127 ft



RISING HEAD SLUG TEST SMW10

Data Set: W:\BASF\Riverview\PhaseII\report\slug0800\smw10r.aqt
Date: 12/24/00 Time: 13:08:23

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: SMW10
Test Date: 08/22/00

AQUIFER DATA

Saturated Thickness: 10.5 ft
Anisotropy Ratio (Kz/Kr): 1.

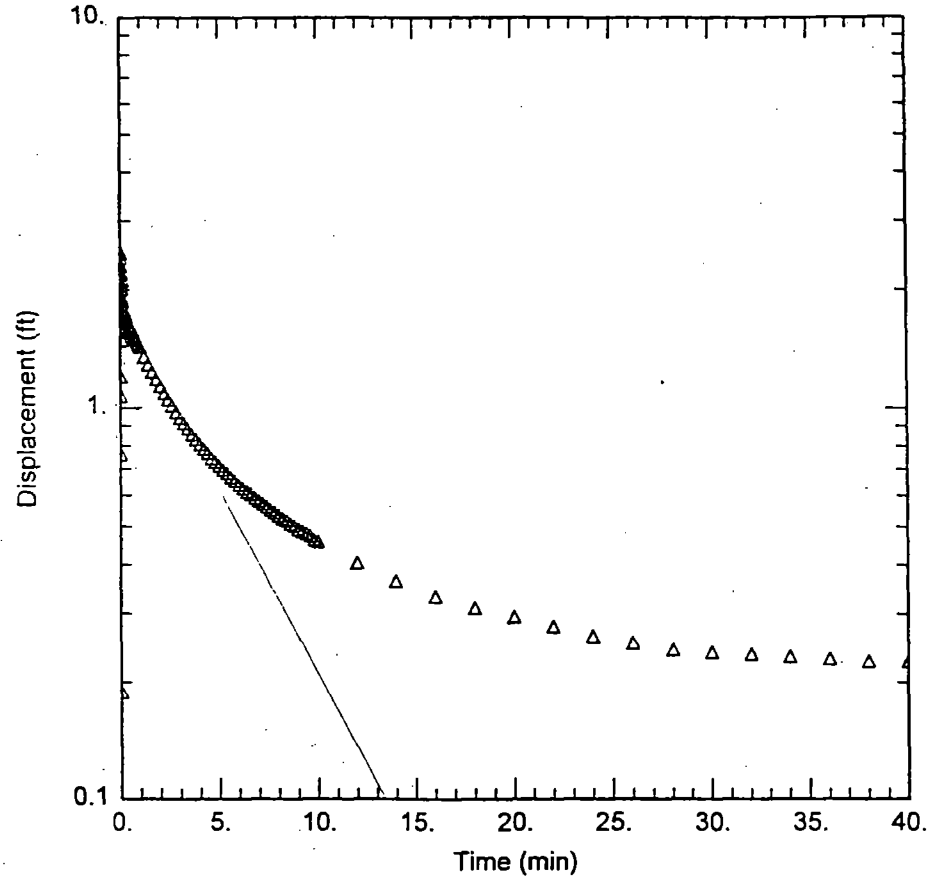
WELL DATA (SMW10)

Initial Displacement: 1.197 ft
Water Column Height: 6.5 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Screen Length: 6. ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.003351 ft/min
y0 = 0.8912 ft



FALLING HEAD SLUG TEST IMW10

Data Set: W:\BASF\Riverview\PhaseII\report\pslug0800\imw10f.aqt
Date: 12/24/00 Time: 13:09:43

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: IMW10
Test Date: 08/22/00

AQUIFER DATA

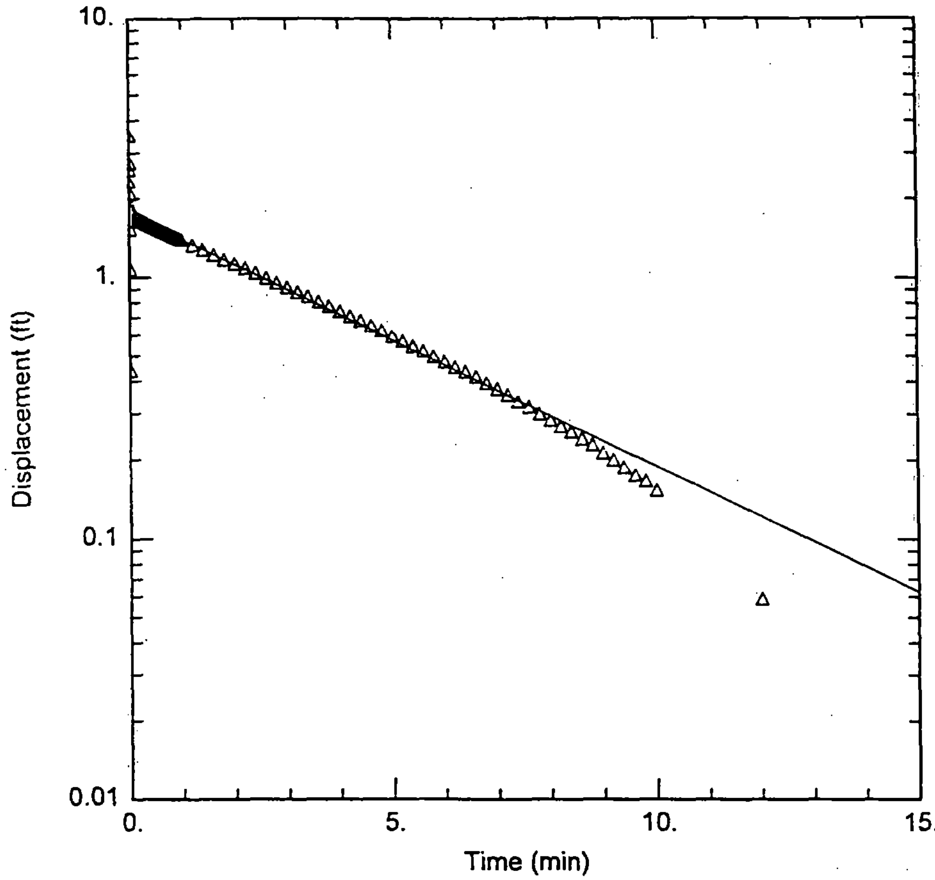
Saturated Thickness: 9.78 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (IMW10)

Initial Displacement: 2.482 ft
Casing Radius: 0.083 ft
Screen Length: 6. ft
Water Column Height: 9.78 ft
Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0003001 ft/min
y0 = 1.819 ft



RISING HEAD SLUG TEST IMW10

Data Set: W:\BASF\Riverview\PhaseII\report\pslug0800\imw10r.aqt
Date: 12/24/00 Time: 13:10:36

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: IMW10
Test Date: IMW10

AQUIFER DATA

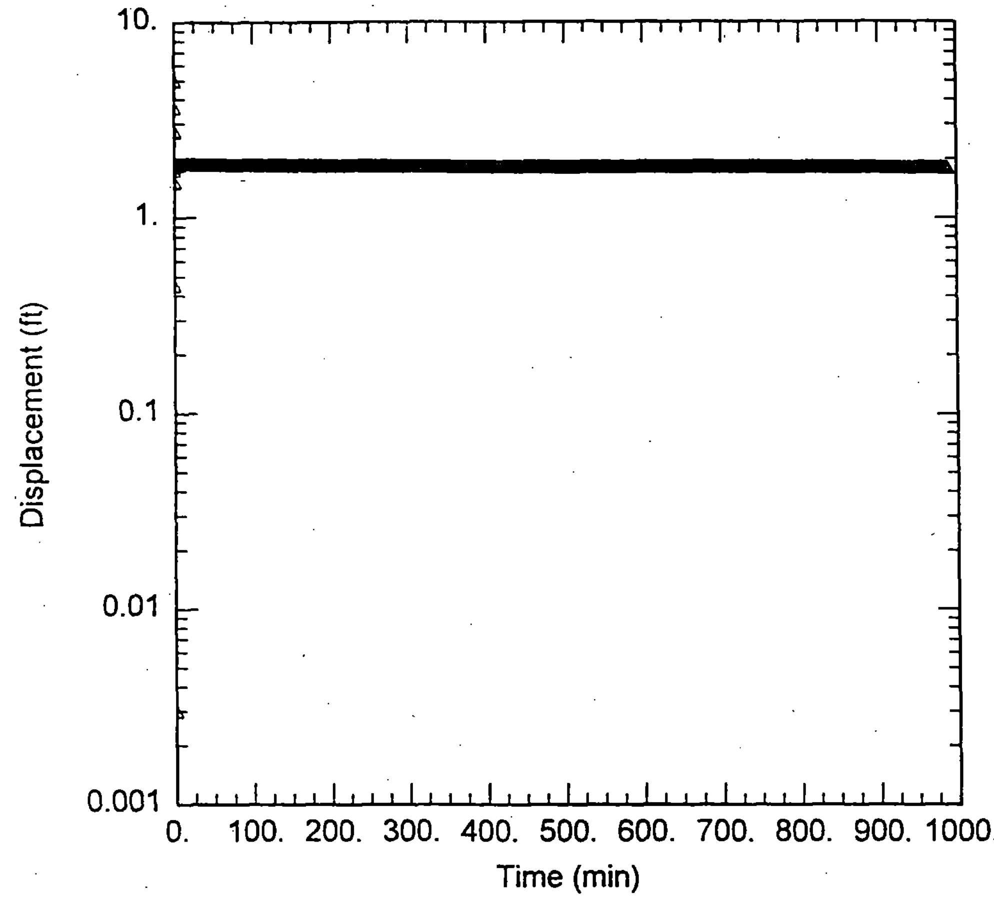
Saturated Thickness: 9.78 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (IMW10)

Initial Displacement: 3.526 ft
Casing Radius: 0.083 ft
Screen Length: 6. ft
Water Column Height: 9.78 ft
Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0003072 ft/min
y0 = 1.747 ft



FALLING HEAD SLUG TEST DMW10

Data Set: W:\BASF\Riverview\PhaseII\report\slug1100\DMW10f.aqt
Date: 12/24/00 Time: 13:11:41

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: DMW10
Test Date: 11/15-16/00

AQUIFER DATA

Saturated Thickness: 43.5 ft Anisotropy Ratio (Kz/Kr): 1.

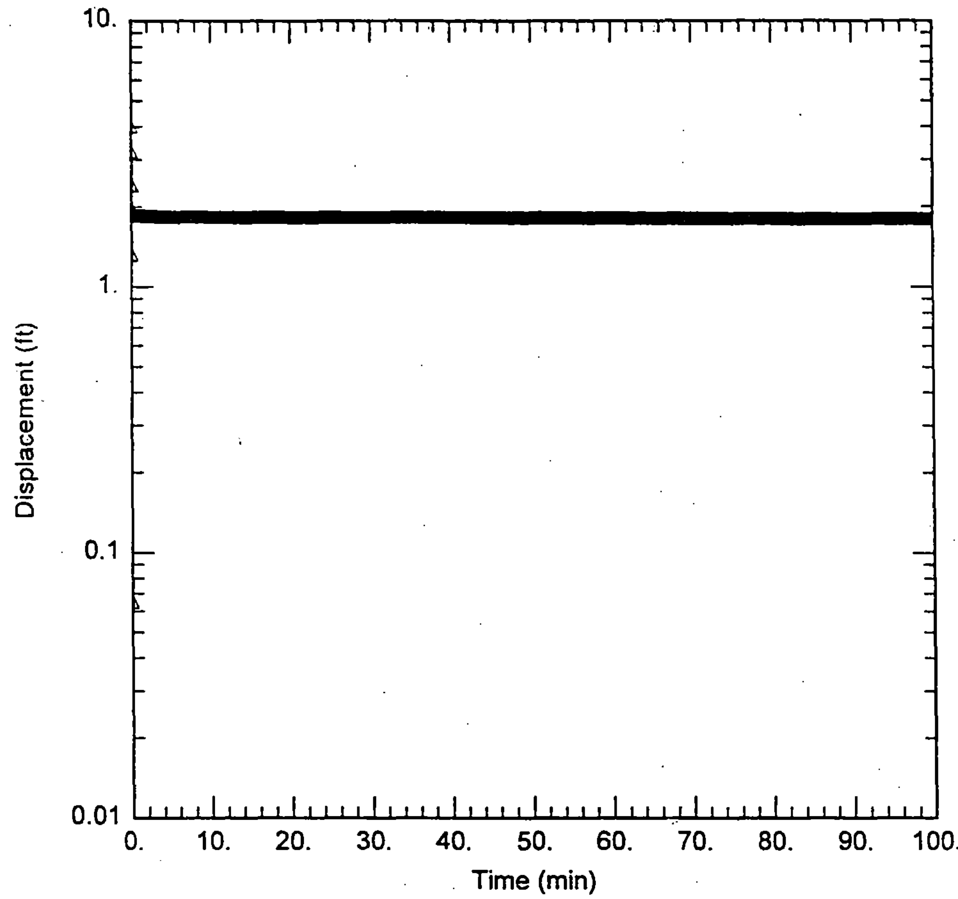
WELL DATA (DMW10)

Initial Displacement: 5. ft
Casing Radius: 0.083 ft
Screen Length: 7. ft
Water Column Height: 19.5 ft
Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Confined Solution Method: Bouwer-Rice

K = 3.005E-08 ft/min y0 = 1.848 ft



RISING HEAD SLUG TEST DMW10

Data Set: W:\BASF\Riverview\PhaseII\report\slug1100\DMW10R.aqt
Date: 12/24/00 Time: 13:12:15

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: DMW10
Test Date: 11/16/00

AQUIFER DATA

Saturated Thickness: 43.5 ft
Anisotropy Ratio (Kz/Kr): 1.

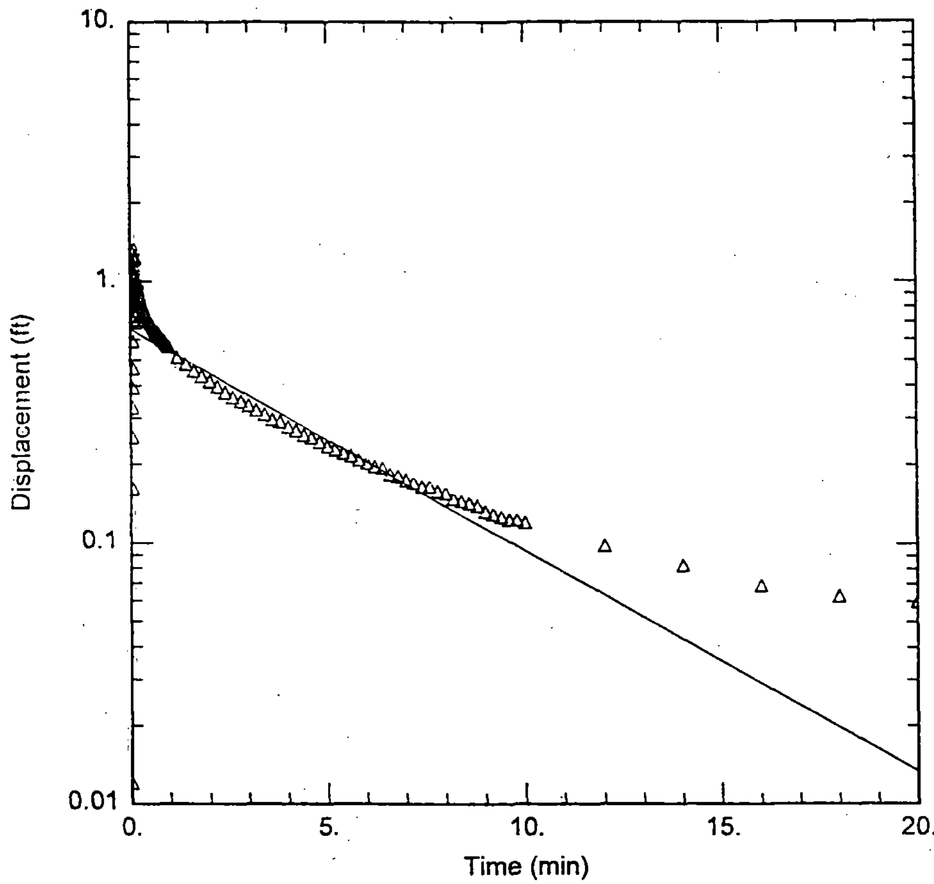
WELL DATA (DMW10)

Initial Displacement: 4. ft
Water Column Height: 19.5 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Screen Length: 7. ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice

K = 2.812E-07 ft/min
y0 = 1.838 ft



FALLING HEAD SLUG TEST IMW11

Data Set: W:\BASF\Riverview\PhaseII\report\slug0800\imw11f.aqt
Date: 12/24/00 Time: 13:13:47

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: RIverview, MI
Test Well: IMW11
Test Date: 08/23/00

AQUIFER DATA

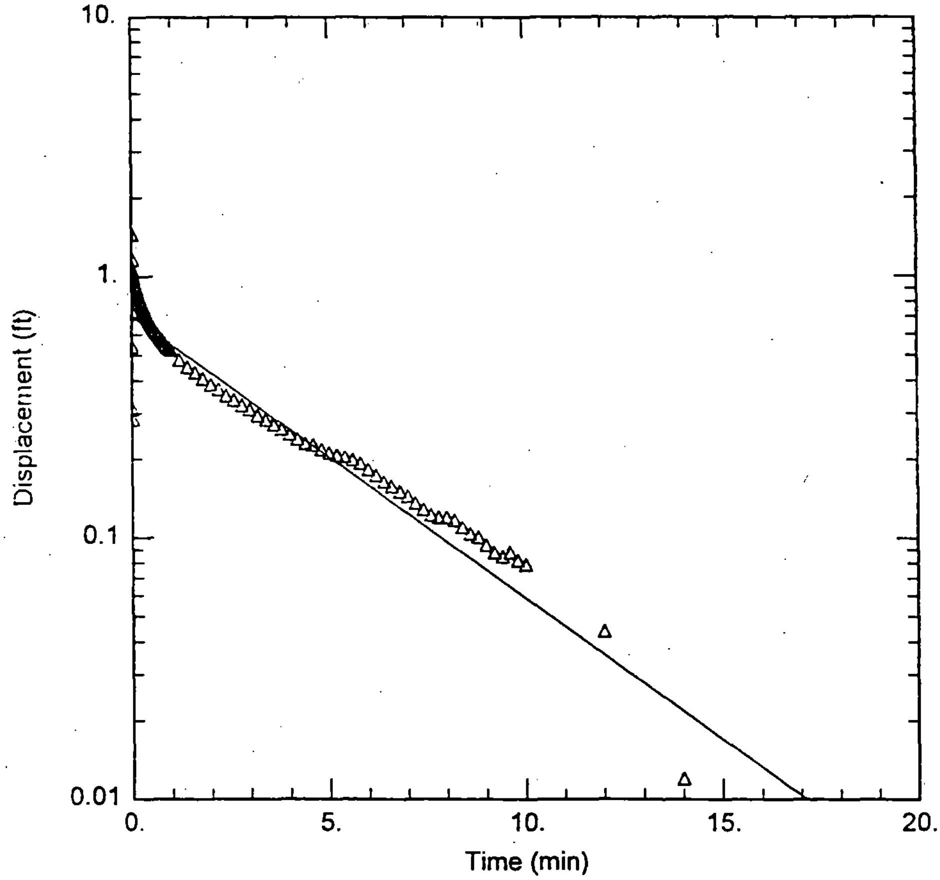
Saturated Thickness: 10.93 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (IMW11)

Initial Displacement: 1.323 ft
Casing Radius: 0.083 ft
Screen Length: 6. ft
Water Column Height: 9.93 ft
Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0002431 ft/min
y0 = 0.657 ft



RISING HEAD SLUG TEST IMW11

Data Set: W:\BASF\Riverview\PhaseII\report\slug0800\imw11r.aqt
Date: 12/24/00 Time: 13:14:15

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: IMW11
Test Date: 08/23/00

AQUIFER DATA

Saturated Thickness: 10.93 ft Anisotropy Ratio (Kz/Kr): 1.

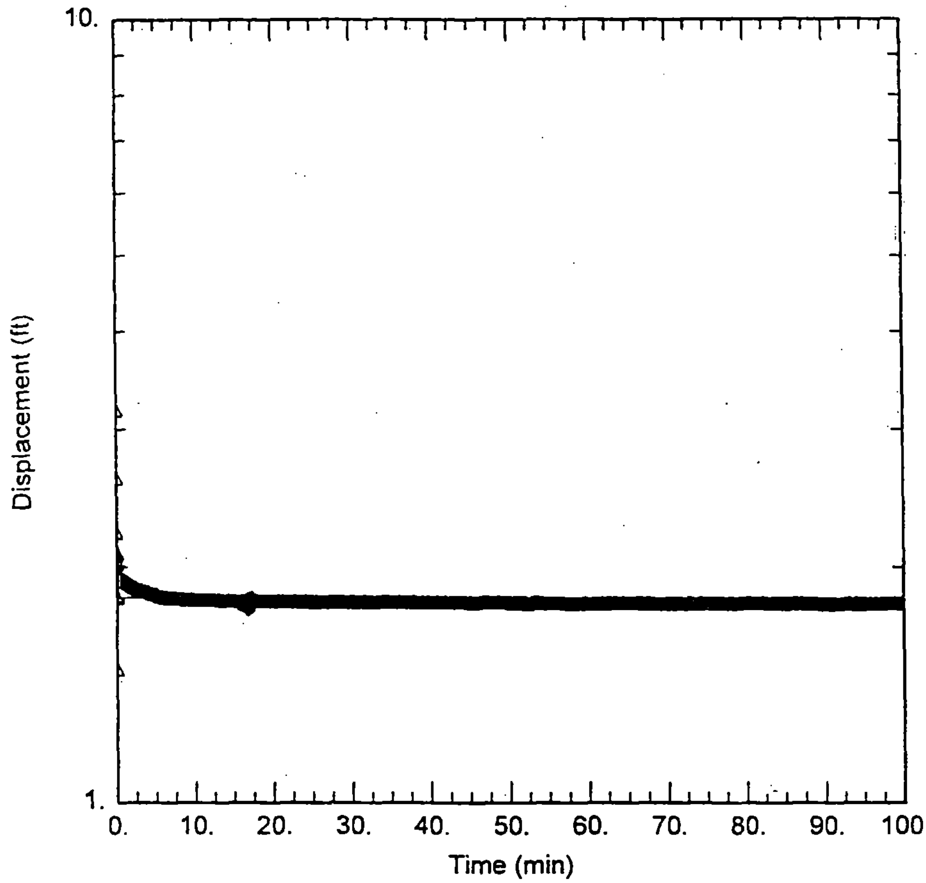
WELL DATA (IMW11)

Initial Displacement: 1.445 ft Water Column Height: 9.93 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.333 ft
Screen Length: 6. ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0003097 ft/min y0 = 0.7056 ft



FALLING HEAD SLUG TEST DMW11

Data Set: W:\BASF\Riverview\PhaseII\report\slug1100\DMW11F.aqt
Date: 12/24/00 Time: 13:15:02

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: DMW11
Test Date: 11/15/00

AQUIFER DATA

Saturated Thickness: 37.76 ft
Anisotropy Ratio (Kz/Kr): 1.

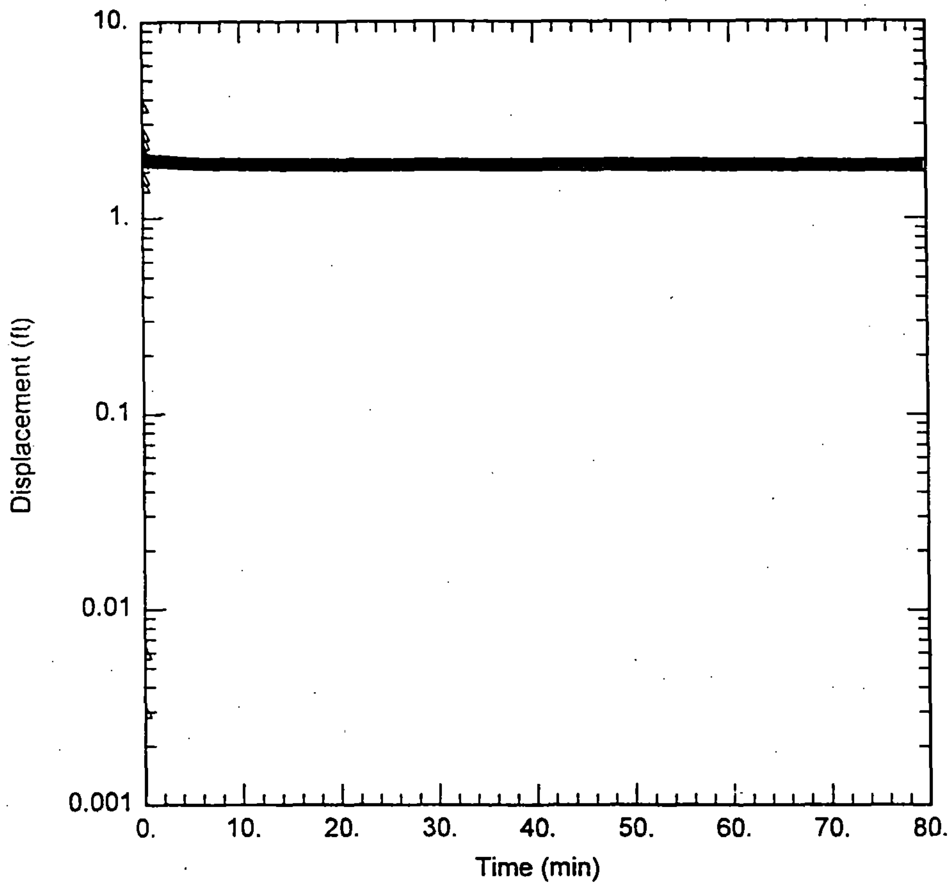
WELL DATA (DMW11)

Initial Displacement: 3.177 ft
Casing Radius: 0.083 ft
Screen Length: 7. ft
Water Column Height: 18.76 ft
Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice

K = 1.655E-07 ft/min
y0 = 1.83 ft



RISING HEAD SLUG TEST DMW11

Data Set: W:\BASF\Riverview\PhaseII\report\slug1100\DMW11R.aqt
Date: 12/24/00 Time: 13:15:33

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: DMW11
Test Date: 11/15/00

AQUIFER DATA

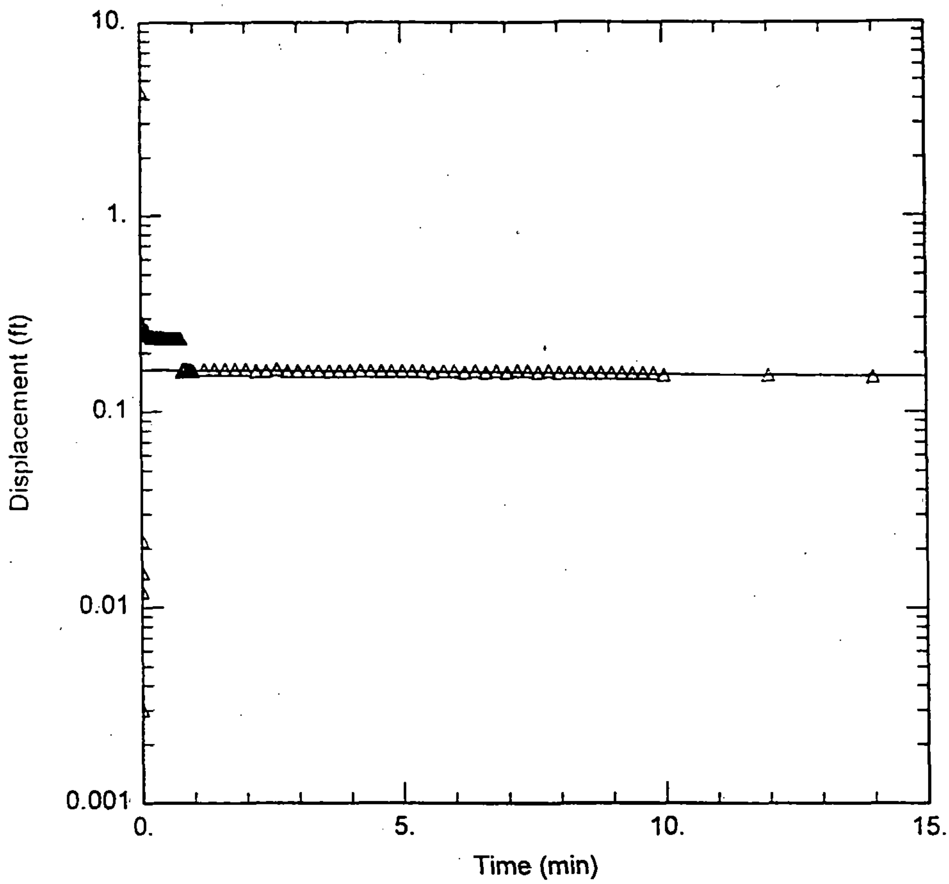
Saturated Thickness: 37.76 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (DMW11)

Initial Displacement: 3.713 ft Water Column Height: 18.76 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.333 ft
Screen Length: 7. ft

SOLUTION

Aquifer Model: Confined Solution Method: Bouwer-Rice
K = 5.112E-07 ft/min y0 = 1.896 ft



RISING HEAD SLUG TEST SMW12

Data Set: W:\BASF\Riverview\PhaseII\report\uslug0800\smw12r.aqt
Date: 12/24/00 Time: 13:16:10

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: SMW12
Test Date: 08/29/00

AQUIFER DATA

Saturated Thickness: 9.35 ft
Anisotropy Ratio (Kz/Kr): 1.

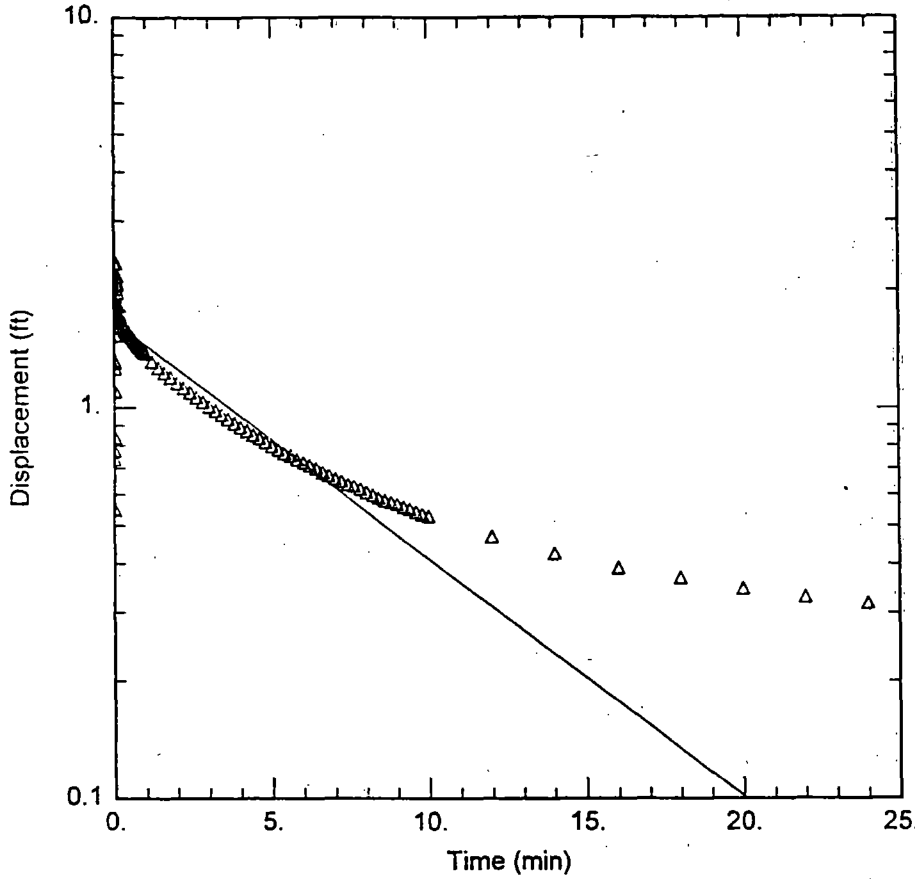
WELL DATA (SMW12)

Initial Displacement: 4.39 ft
Casing Radius: 0.083 ft
Screen Length: 7. ft
Water Column Height: 3.05 ft
Wellbore Radius: 0.333 ft
Gravel Pack Porosity: 0.2

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 1.529E-05 ft/min
y0 = 0.1635 ft



FALLING HEAD SLUG TEST IMW12

Data Set: W:\BASF\Riverview\PhaseII\report\pslug0800\imw12f.aqt
Date: 12/24/00 Time: 13:16:50

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: IMW12
Test Date: 08/23/00

AQUIFER DATA

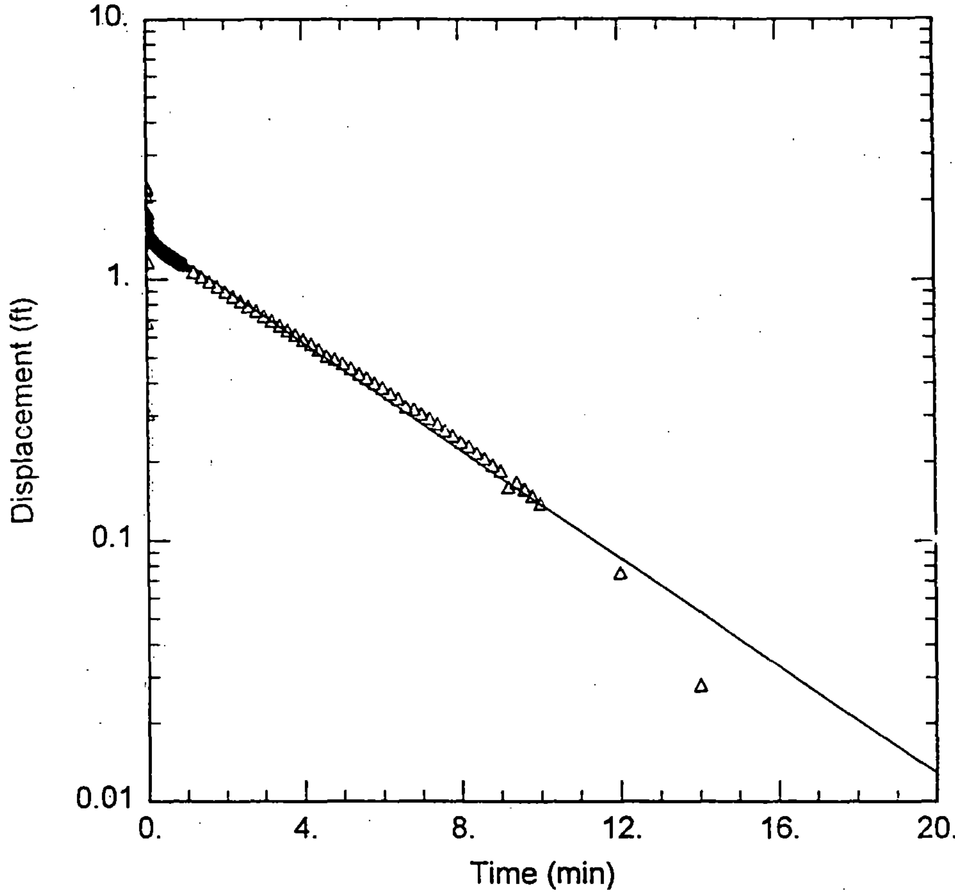
Saturated Thickness: 9.47 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (IMW12)

Initial Displacement: 2.335 ft Water Column Height: 8.17 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.333 ft
Screen Length: 7. ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 0.0001465 ft/min y0 = 1.662 ft



RISING HEAD SLUG TEST IMW12

Data Set: W:\BASF\Riverview\PhaseII\report\pslug0800\imw12r.aqt
Date: 12/24/00 Time: 13:17:15

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: IMW12
Test Date: 08/23/00

AQUIFER DATA

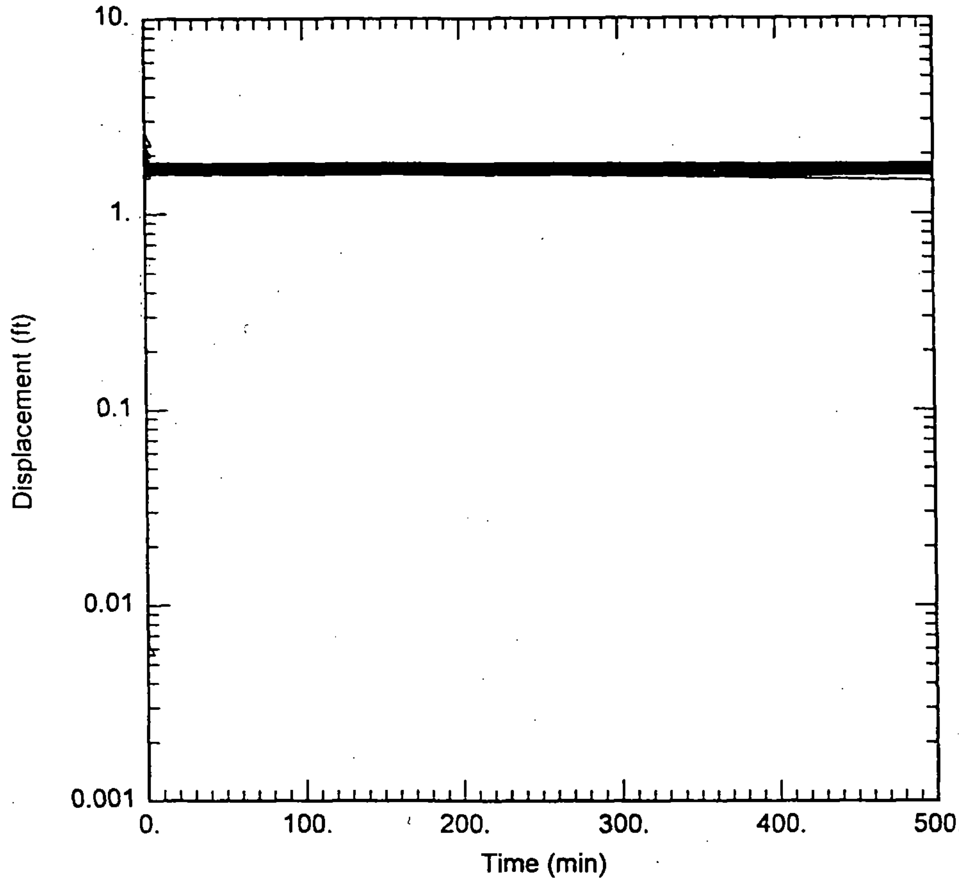
Saturated Thickness: 9.47 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (IMW12)

Initial Displacement: 2.242 ft
Water Column Height: 8.17 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Screen Length: 7. ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0002483 ft/min
y0 = 1.468 ft



FALLING HEAD SLUG TEST DMW12

Data Set: W:\BASF\Riverview\PhaseII\report\slug1100\DMW12F.aqt
Date: 12/24/00 Time: 13:18:07

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: DMW12
Test Date: 11/15-16/00

AQUIFER DATA

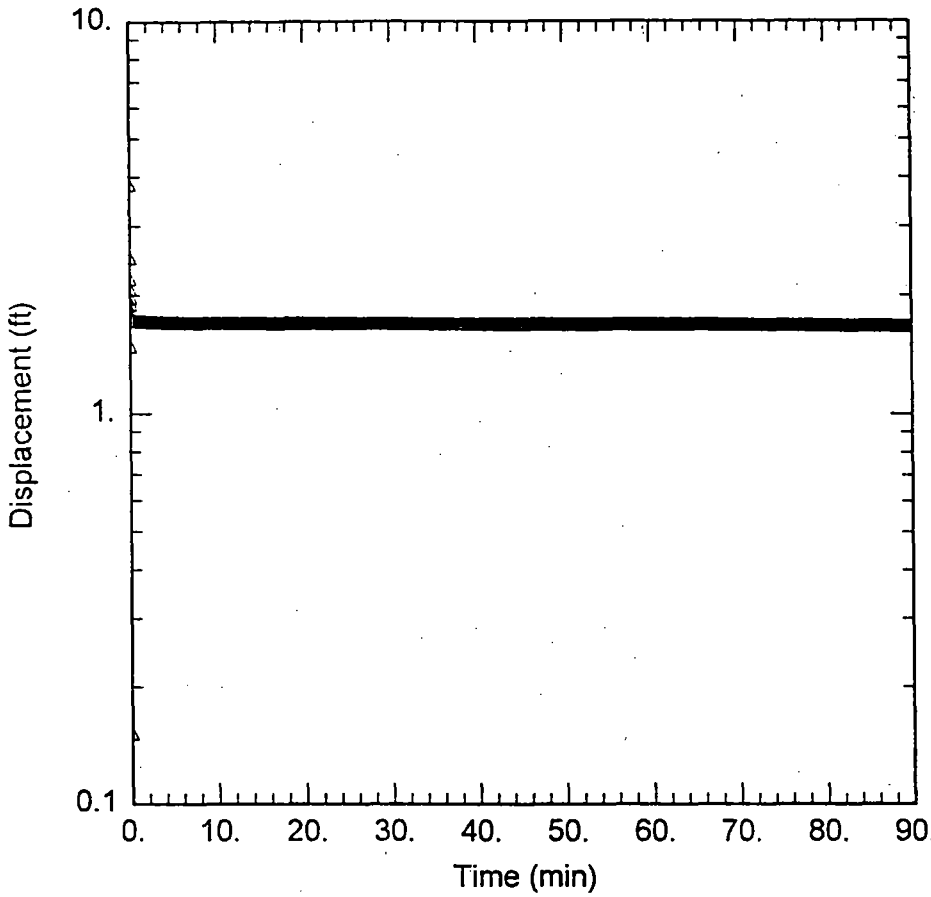
Saturated Thickness: 36.54 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (DWM12)

Initial Displacement: 2.424 ft
Water Column Height: 16.54 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Screen Length: 7. ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 2.854E-07 ft/min
y0 = 1.675 ft



RISING HEAD SLUG TEST DMW12

Data Set: W:\BASF\Riverview\PhaseII\report\slug1100\DMW12R.aqt
Date: 12/24/00 Time: 13:18:33

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: RIverview, MI
Test Well: DMW12
Test Date: 11/15/00

AQUIFER DATA

Saturated Thickness: 36.54 ft
Anisotropy Ratio (Kz/Kr): 1.

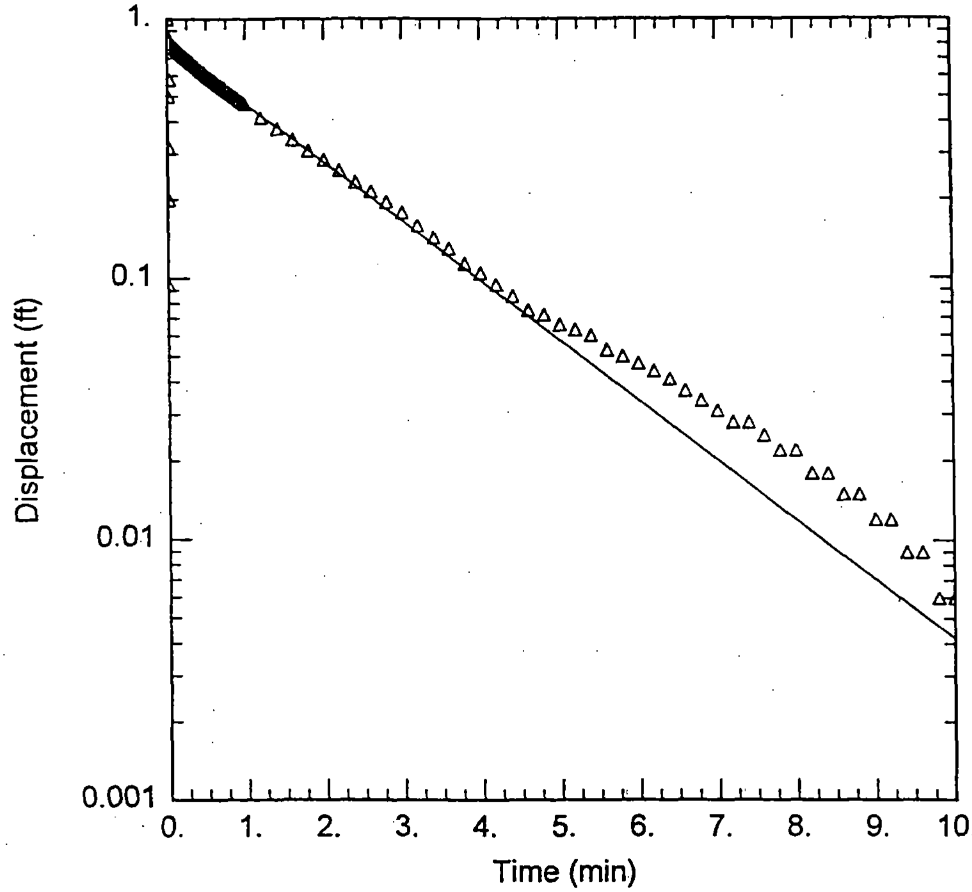
WELL DATA (DMW12)

Initial Displacement: 3.832 ft
Casing Radius: 0.083 ft
Screen Length: 7. ft
Water Column Height: 16.54 ft
Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice

K = 3.172E-07 ft/min
y0 = 1.711 ft



RISING HEAD SLUG TEST SMW13

Data Set: W:\BASF\Riverview\PhaseII\report\slug0800\smw13r.aqt
Date: 12/24/00 Time: 13:22:07

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: SMW13
Test Date: 08/25/00

AQUIFER DATA

Saturated Thickness: 12.42 ft
Anisotropy Ratio (Kz/Kr): 1.

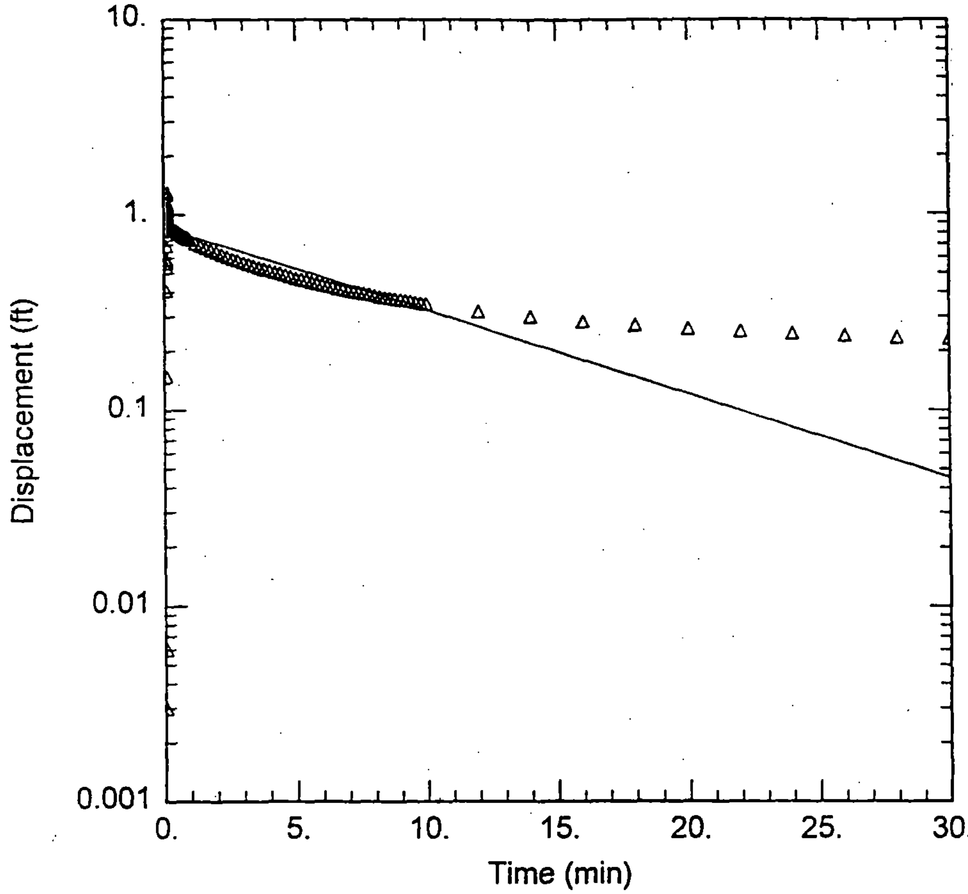
WELL DATA (SMW13)

Initial Displacement: 1. ft
Casing Radius: 0.083 ft
Screen Length: 8.5 ft
Water Column Height: 6.42 ft
Wellbore Radius: 0.333 ft
Gravel Pack Porosity: 0.2

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.001694 ft/min
y0 = 0.7942 ft



FALLING HEAD SLUG TEST IMW13

Data Set: W:\BASF\Riverview\PhaseII\report\slug0800\imw13f.aqt
Date: 12/24/00 Time: 13:22:38

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: IMW13
Test Date: 08/24/00

AQUIFER DATA

Saturated Thickness: 11.71 ft
Anisotropy Ratio (Kz/Kr): 1.

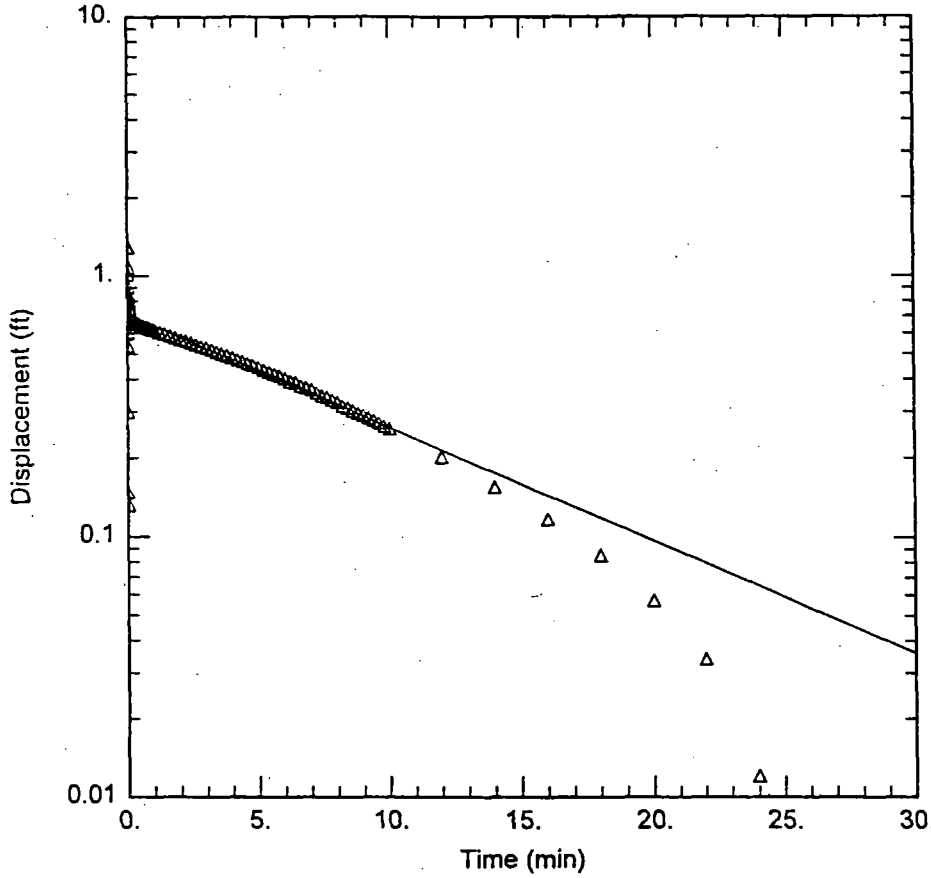
WELL DATA (IMW13)

Initial Displacement: 1.307 ft
Casing Radius: 0.083 ft
Screen Length: 7. ft
Water Column Height: 10.71 ft
Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.0001103 ft/min
y0 = 0.8647 ft



RISING HEAD SLUG TEST IMW13

Data Set: W:\BASF\Riverview\PhaseII\report\slug0800\imw13r.aqt
Date: 12/24/00 Time: 13:24:14

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: IMW13
Test Date: 08/24/00

AQUIFER DATA

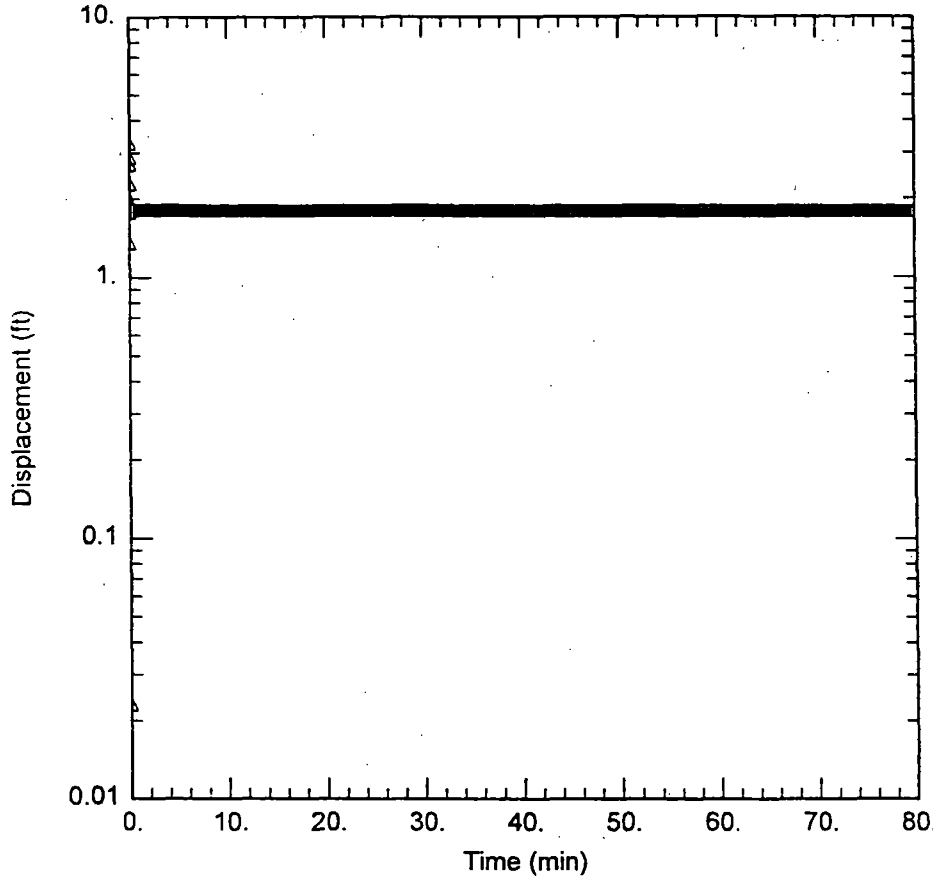
Saturated Thickness: 11.71 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (IMW13)

Initial Displacement: 1.281 ft
Water Column Height: 10.71 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Screen Length: 7. ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0001116 ft/min
y0 = 0.7085 ft



FALLING HEAD SLUG TEST DMW13

Data Set: W:\BASF\Riverview\PhaseII\report\slug1100\DMW13F.aqt
Date: 12/24/00 Time: 13:24:58

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: DMW13
Test Date: 11/16/00

AQUIFER DATA

Saturated Thickness: 39.14 ft
Anisotropy Ratio (Kz/Kr): 1.

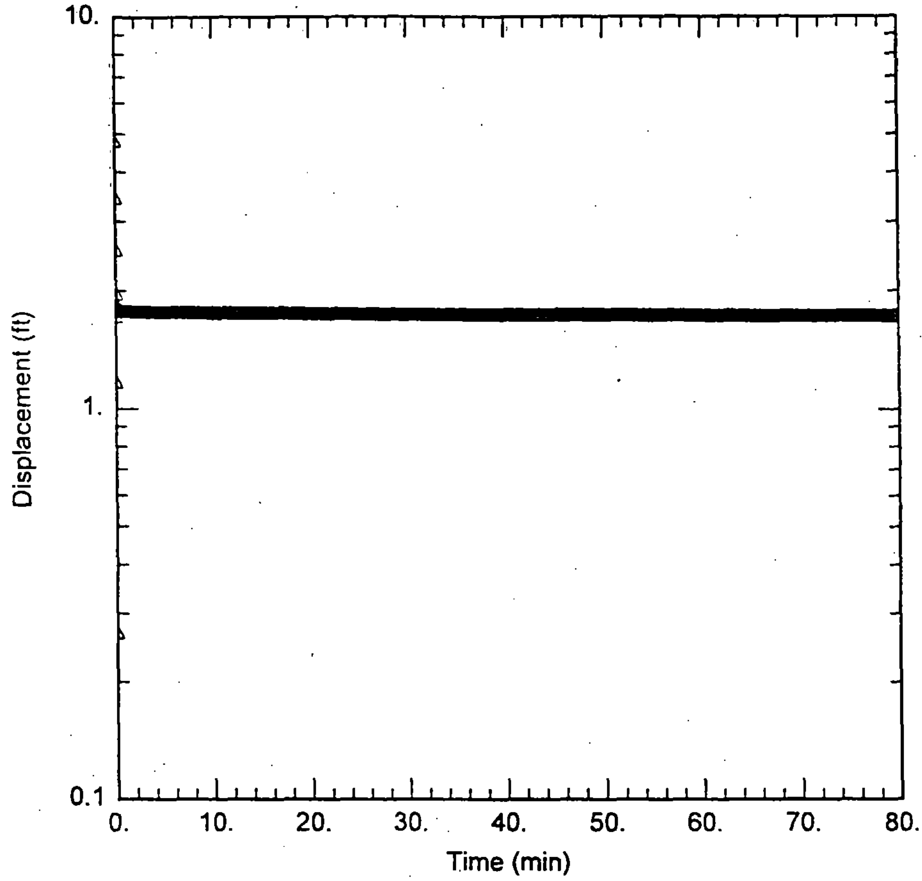
WELL DATA (DMW13)

Initial Displacement: 3.259 ft
Casing Radius: 0.083 ft
Screen Length: 7. ft
Water Column Height: 17.14 ft
Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice

K = 2.657E-07 ft/min
y0 = 1.809 ft



RISING HEAD SLUG TEST DMW13

Data Set: W:\BASF\Riverview\PhaseII\report\slug1100\DMW13R.aqt
Date: 12/24/00 Time: 13:25:21

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: DMW13
Test Date: 11/16/00

AQUIFER DATA

Saturated Thickness: 39.14 ft
Anisotropy Ratio (Kz/Kr): 1.

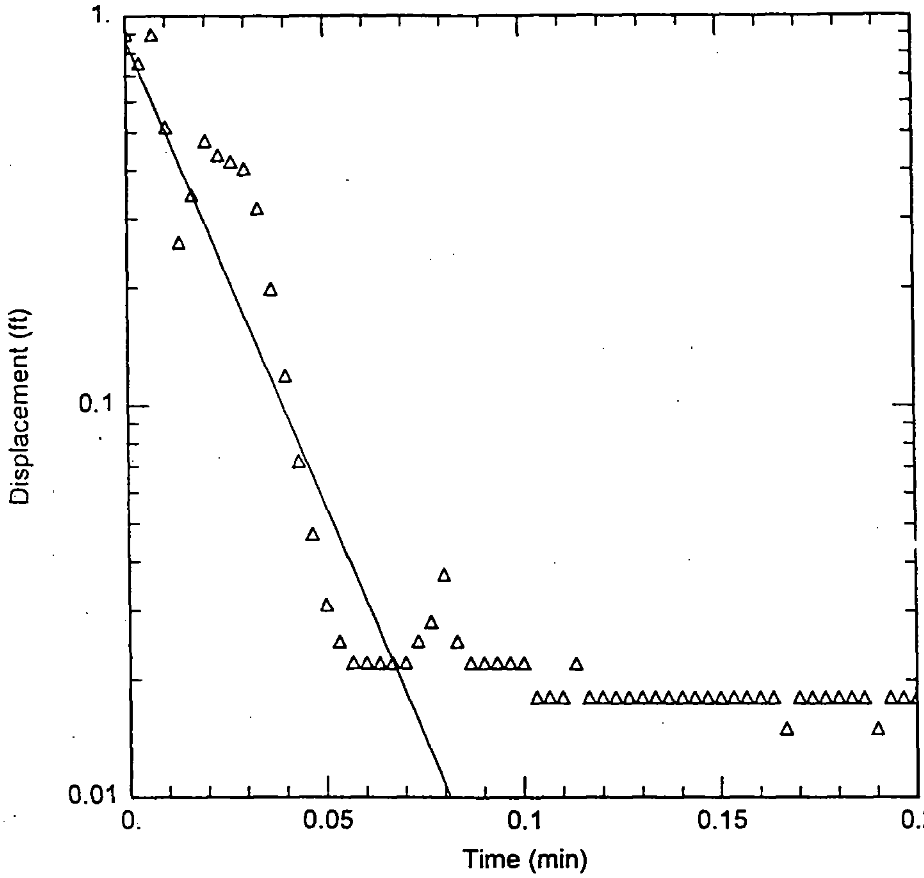
WELL DATA (DMW13)

Initial Displacement: 4.804 ft
Casing Radius: 0.083 ft
Screen Length: 7. ft
Water Column Height: 17.14 ft
Wellbore Radius: 0.33 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice

K = 3.166E-07 ft/min
y0 = 1.762 ft



RISING HEAD SLUG TEST SMW14

Data Set: W:\BASF\Riverview\PhaseII\report\pslug0800\smw14r.aqt
Date: 12/24/00 Time: 13:26:00

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: SMW14
Test Date: 08/23/00

AQUIFER DATA

Saturated Thickness: 12.46 ft
Anisotropy Ratio (Kz/Kr): 1.

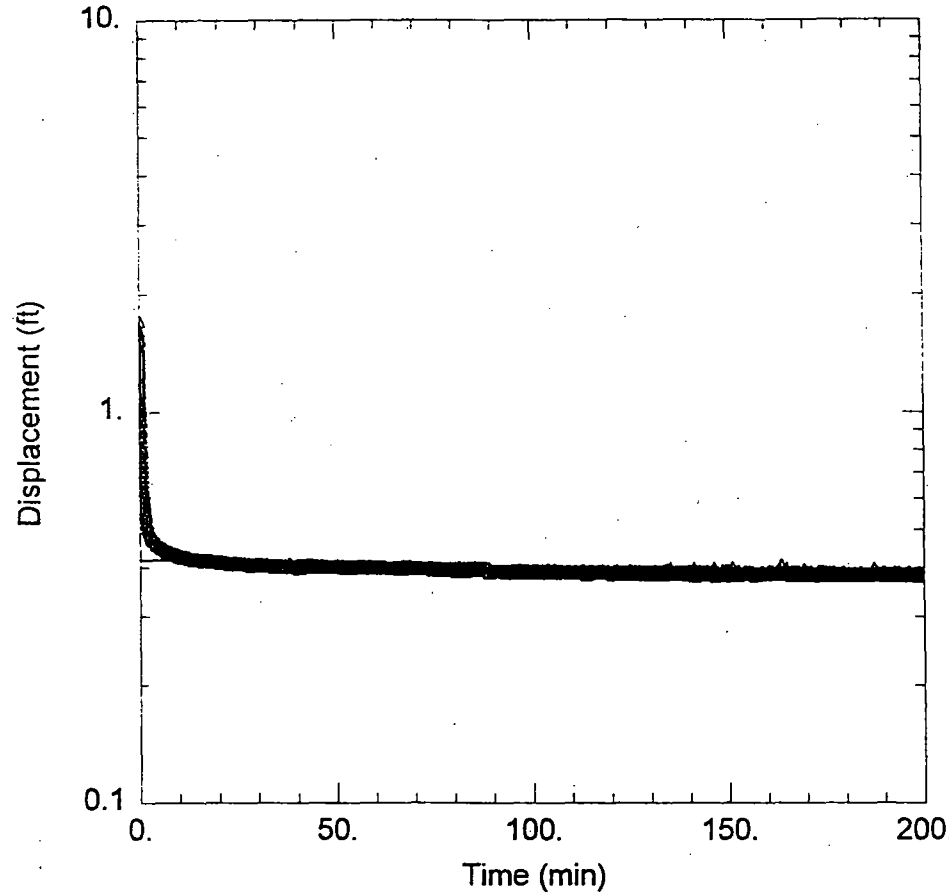
WELL DATA (SMW14)

Initial Displacement: 0.894 ft
Casing Radius: 0.083 ft
Screen Length: 6. ft
Water Column Height: 5.46 ft
Wellbore Radius: 0.333 ft
Gravel Pack Porosity: 0.2

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.2241 ft/min
y0 = 0.8619 ft



RISING HEAD SLUG TEST SMW15

Data Set: W:\BASF\Riverview\PhaseII\report\slug1100\SMW15R.aqt
Date: 12/24/00 Time: 13:27:11

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: RIverview, MI
Test Well: SMW15
Test Date: 11/16/00

AQUIFER DATA

Saturated Thickness: 10.84 ft
Anisotropy Ratio (Kz/Kr): 1.

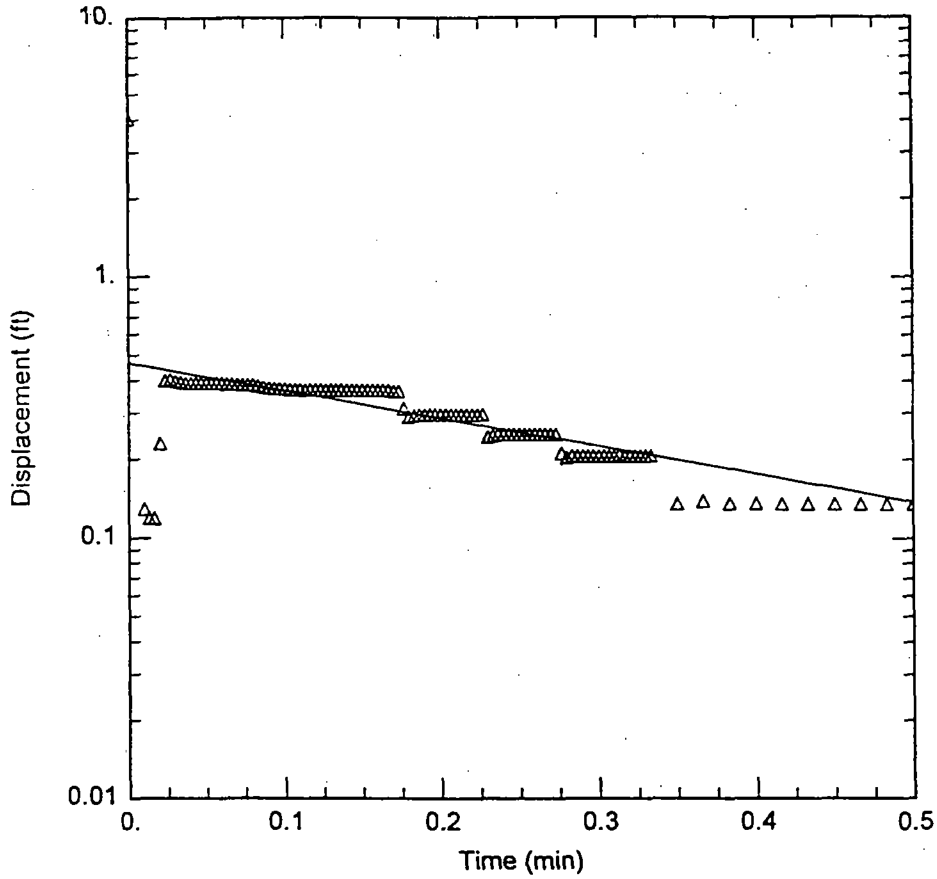
WELL DATA (SMW15)

Initial Displacement: 1.716 ft
Casing Radius: 0.083 ft
Screen Length: 6. ft
Water Column Height: 9.5 ft
Wellbore Radius: 0.333 ft
Gravel Pack Porosity: 0.2

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 2.65E-06 ft/min
y0 = 0.4188 ft



RISING HEAD SLUG TEST SMW16

Data Set: W:\BASF\Riverview\PhaseII\report\uslug0800\smw16r.aqt
Date: 12/24/00 Time: 13:27:56

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: SMW16
Test Date: 08/29/00

AQUIFER DATA

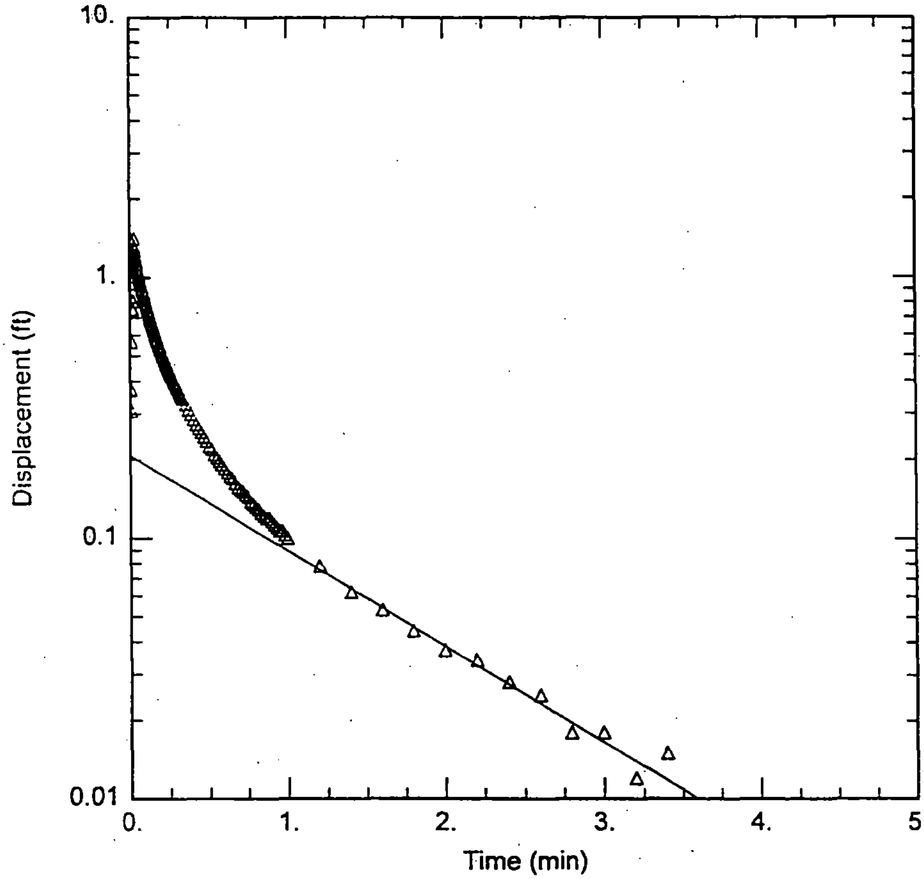
Saturated Thickness: 2.61 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (SMW16)

Initial Displacement: 4.04 ft
Casing Radius: 0.083 ft
Screen Length: 4.5 ft
Water Column Height: 2.61 ft
Wellbore Radius: 0.333 ft
Gravel Pack Porosity: 0.2

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0117 ft/min
y0 = 0.4669 ft



RISING HEAD SLUG TEST SMW17

Data Set: W:\BASF\Riverview\PhaseII\report\pslug0800\smw17r.aqt
Date: 12/24/00 Time: 13:28:34

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: SMW17
Test Date: 08/23/00

AQUIFER DATA

Saturated Thickness: 11.79 ft
Anisotropy Ratio (Kz/Kr): 1.

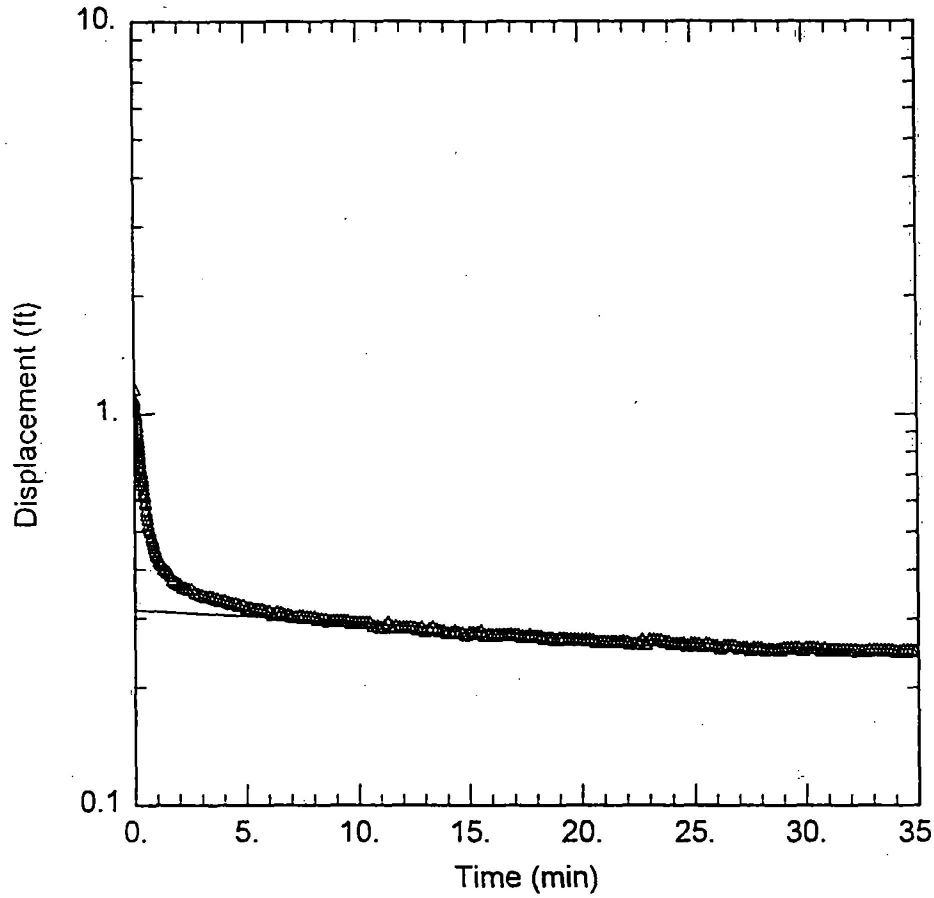
WELL DATA (SMW17)

Initial Displacement: 1.403 ft
Casing Radius: 0.083 ft
Screen Length: 9.5 ft
Water Column Height: 8.75 ft
Wellbore Radius: 0.333 ft
Gravel Pack Porosity: 0.2

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.002729 ft/min
y0 = 0.2081 ft



RISING HEAD SLUG TEST SMW18

Data Set: W:\BASF\Riverview\PhaseII\report\slug1100\SMW18rh3.aqt
Date: 12/24/00 Time: 13:29:23

PROJECT INFORMATION

Company: URS Corporation
Client: BASF Riverview
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: SMW18
Test Date: 11/17/00

AQUIFER DATA

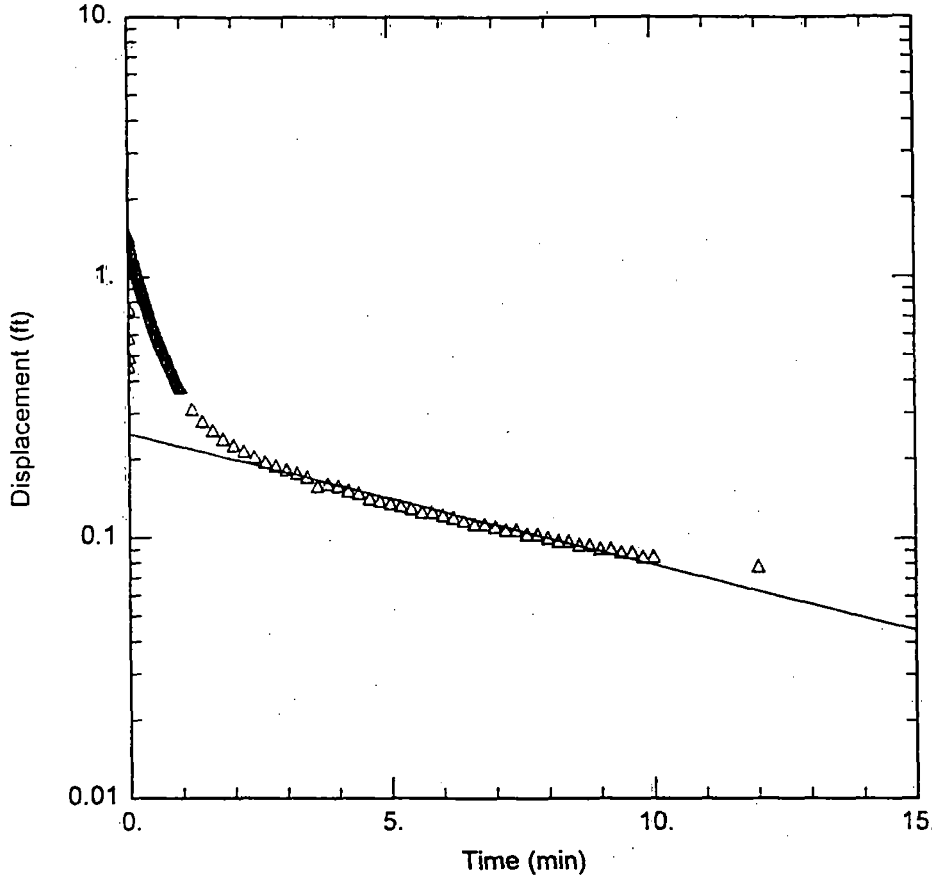
Saturated Thickness: 11.36 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (SMW18)

Initial Displacement: 1.161 ft
Casing Radius: 0.083 ft
Screen Length: 5.5 ft
Water Column Height: 4.36 ft
Wellbore Radius: 0.333 ft
Gravel Pack Porosity: 0.2

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 3.156E-05 ft/min
y0 = 0.315 ft



RISING HEAD SLUG TEST SMW19

Data Set: W:\BASF\Riverview\PhaseII\report\pslug0800\smw19r.aqt
Date: 12/24/00 Time: 13:30:01

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: SMW19
Test Date: 08/23/00

AQUIFER DATA

Saturated Thickness: 12.5 ft Anisotropy Ratio (Kz/Kr): 1.

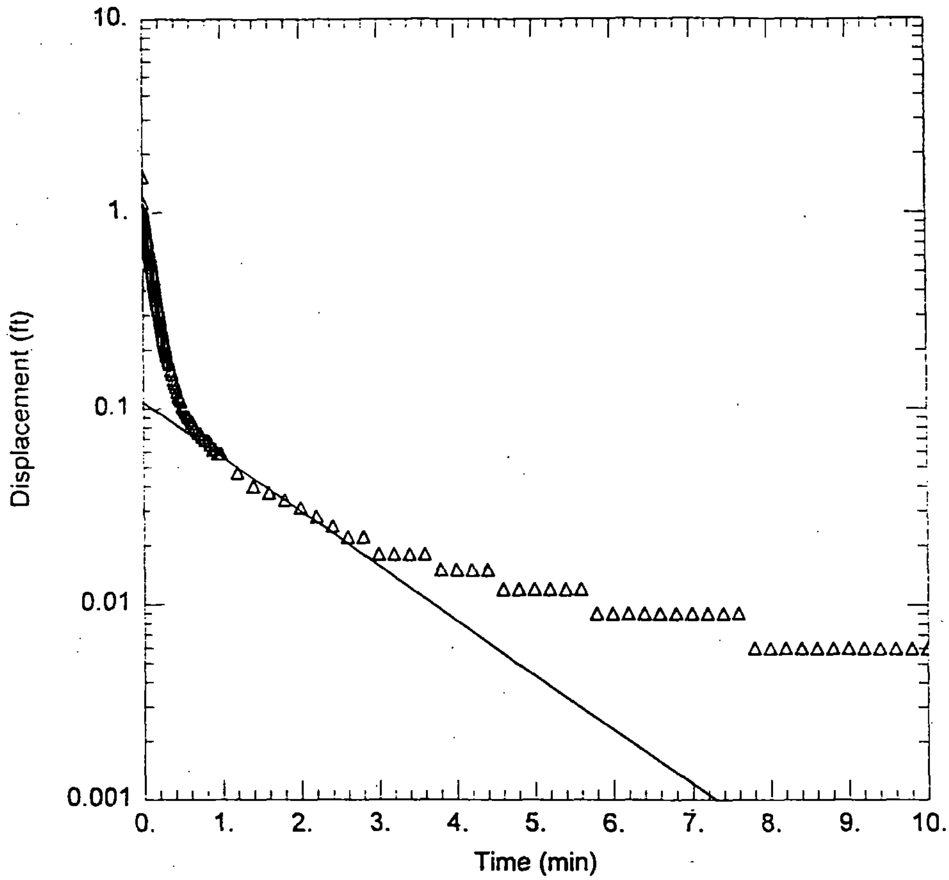
WELL DATA (SMW19)

Initial Displacement: 1.432 ft Water Column Height: 5.5 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.333 ft
Screen Length: 5.5 ft Gravel Pack Porosity: 0.2

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0005045 ft/min y0 = 0.2504 ft



RISING HEAD SLUG TEST SMW20

Data Set: W:\BASF\Riverview\PhaseII\report\pslug0800\smw20r.aqt
Date: 12/24/00 Time: 13:30:29

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: SMW20
Test Date: 08/25/00

AQUIFER DATA

Saturated Thickness: 8.36 ft
Anisotropy Ratio (Kz/Kr): 1.

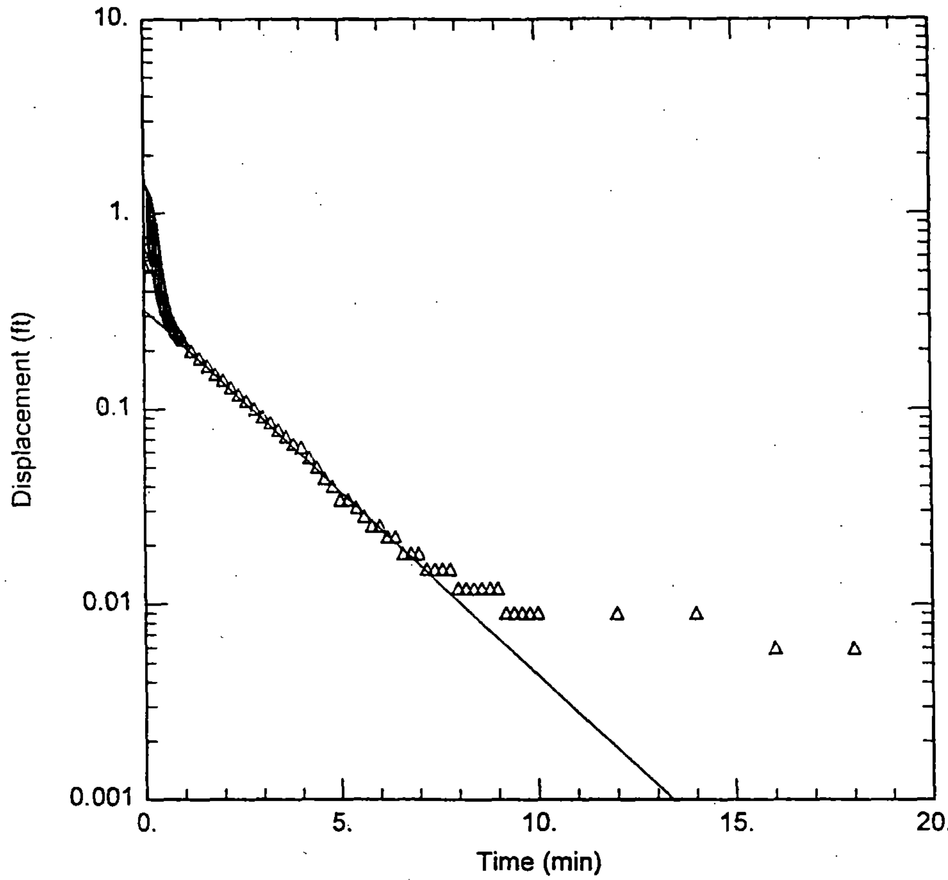
WELL DATA (SMW20)

Initial Displacement: 1.529 ft
Water Column Height: 3.36 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Screen Length: 6. ft
Gravel Pack Porosity: 0.2

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.002312 ft/min
y0 = 0.1081 ft



RISING HEAD SLUG TEST SMW21

Data Set: W:\BASF\Riverview\PhaseII\report\pslug0800\smw21r.aqt
Date: 12/24/00 Time: 13:30:55

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: SMW21
Test Date: 08/25/00

AQUIFER DATA

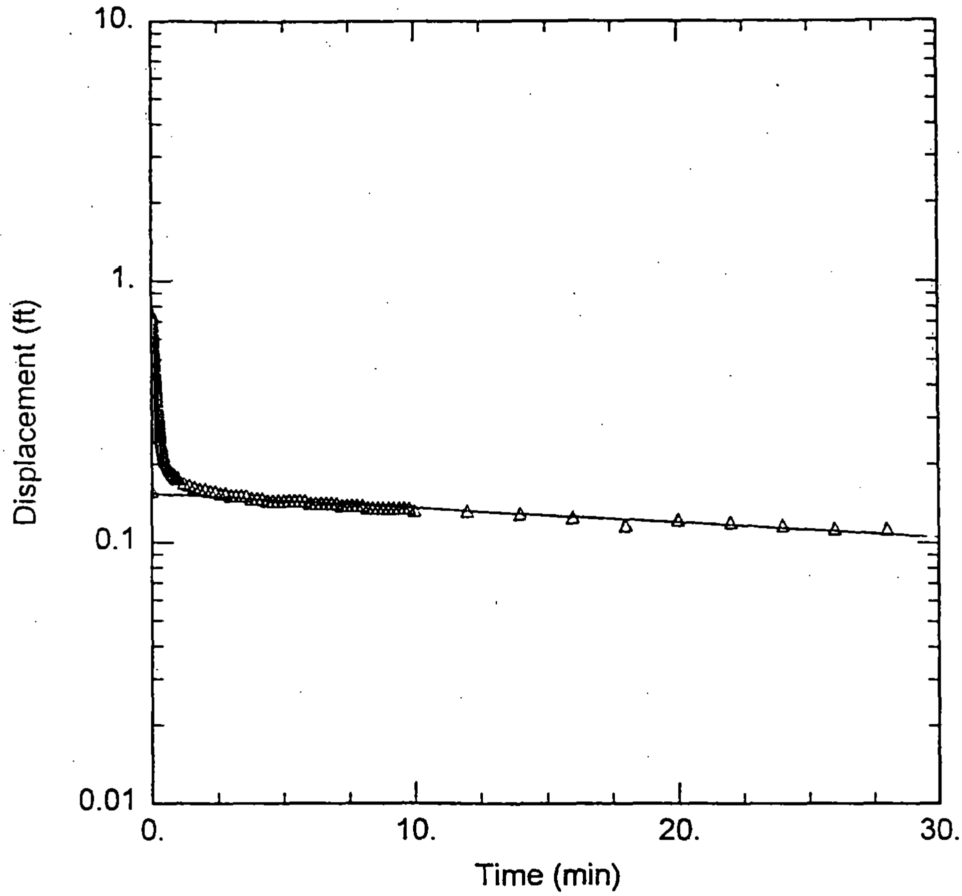
Saturated Thickness: 7. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (SMW21)

Initial Displacement: 1.341 ft
Casing Radius: 0.083 ft
Screen Length: 6. ft
Water Column Height: 5. ft
Wellbore Radius: 0.333 ft
Gravel Pack Porosity: 0.2

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.001794 ft/min
y0 = 0.3242 ft



RISING HEAD SLUG TEST SMW22

Data Set: W:\BASF\Riverview\PhaseII\report\pslug0800\smw22r.aqt
Date: 12/24/00 Time: 13:31:28

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: SMW22
Test Date: 08/24/00

AQUIFER DATA

Saturated Thickness: 4.94 ft
Anisotropy Ratio (Kz/Kr): 1.

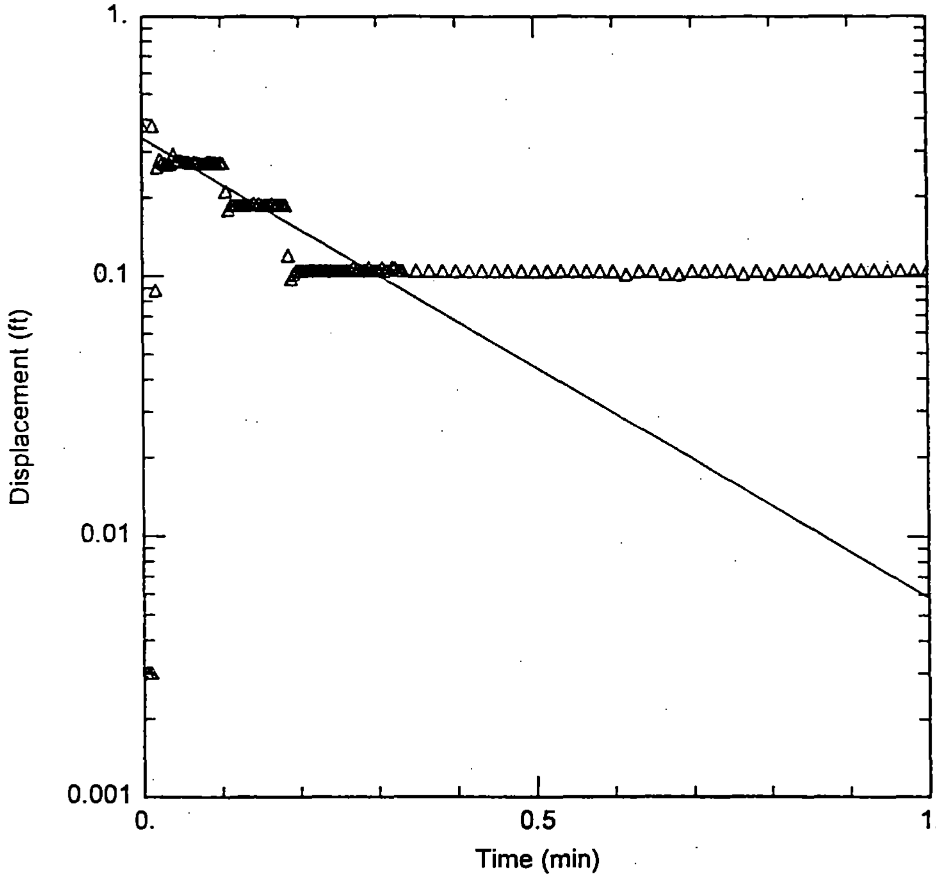
WELL DATA (SMW22)

Initial Displacement: 0.751 ft
Casing Radius: 0.083 ft
Screen Length: 6. ft
Water Column Height: 2.94 ft
Wellbore Radius: 0.333 ft
Gravel Pack Porosity: 0.2

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 4.472E-05 ft/min
y0 = 0.1537 ft



RISING HEAD SLUG TEST SMW23

Data Set: W:\BASF\Riverview\PhaseII\report\uslug0800\smw23r.aqt
Date: 12/24/00 Time: 13:32:43

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: SMW23
Test Date: 08/28/00

AQUIFER DATA

Saturated Thickness: 9.15 ft Anisotropy Ratio (Kz/Kr): 1.

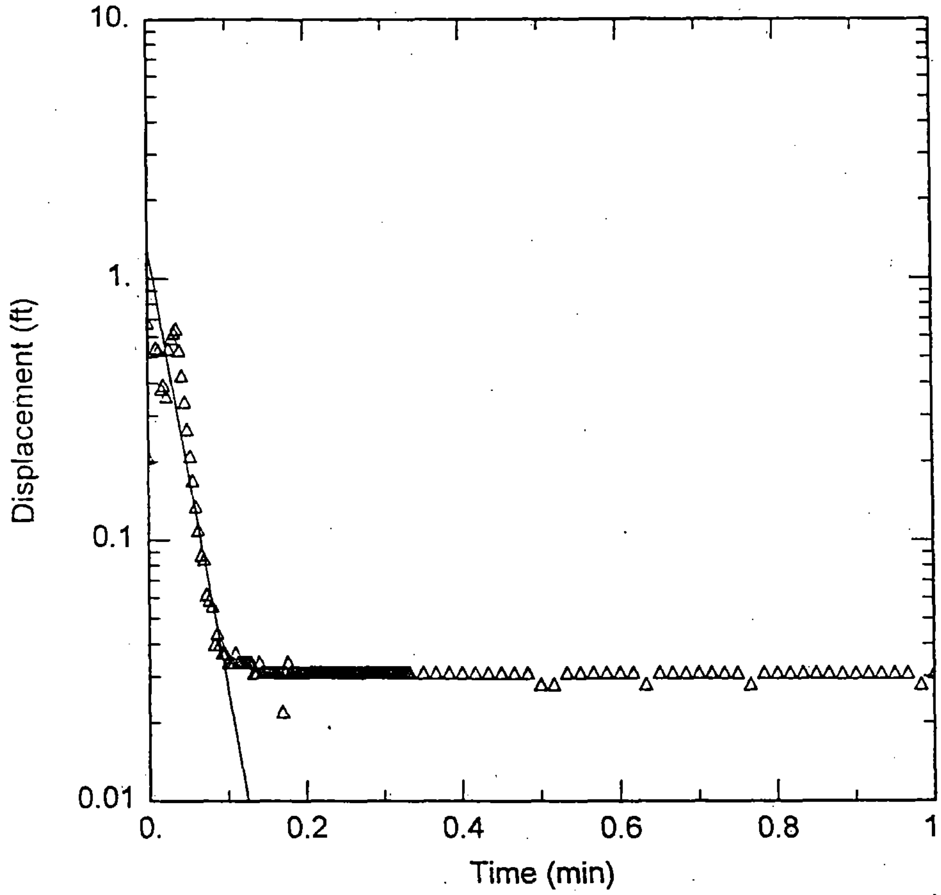
WELL DATA (SMW23)

Initial Displacement: 0.378 ft Water Column Height: 3.15 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.333 ft
Screen Length: 5.5 ft Gravel Pack Porosity: 0.2

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.01528 ft/min y0 = 0.3399 ft



RISING HEAD SLUG TEST SMW24

Data Set: W:\BASF\Riverview\PhaseII\report\pslug0800\smw24r.aqt
Date: 12/24/00 Time: 13:33:29

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: SMW24
Test Date: 08/24/00

AQUIFER DATA

Saturated Thickness: 8.27 ft Anisotropy Ratio (Kz/Kr): 1.

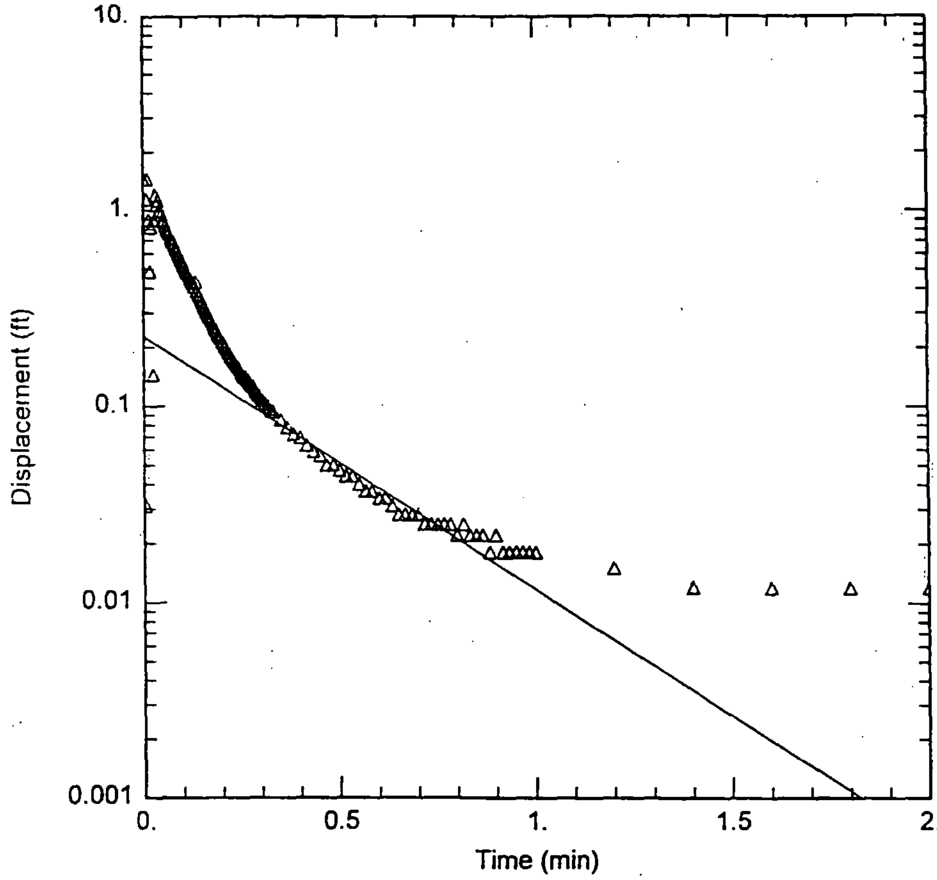
WELL DATA (SMW24)

Initial Displacement: 0.68 ft Water Column Height: 7.77 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.333 ft
Screen Length: 9. ft Gravel Pack Porosity: 0.2

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.1348 ft/min y0 = 1.305 ft



RISING HEAD SLUG TEST SMW25

Data Set: W:\BASF\Riverview\PhaseII\report\pslug0800\smw25r.aqt
Date: 12/24/00 Time: 13:33:59

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: SMW25
Test Date: 08/24/00

AQUIFER DATA

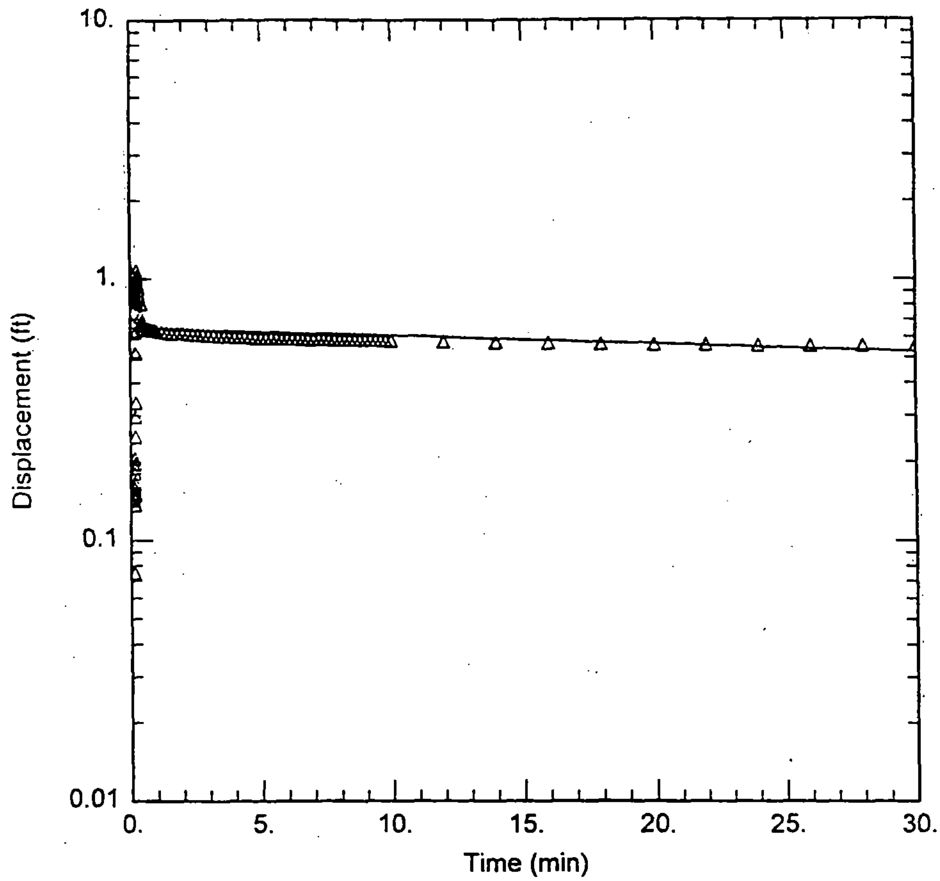
Saturated Thickness: 8.89 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (SMW25)

Initial Displacement: 1.452 ft
Casing Radius: 0.089 ft
Screen Length: 9. ft
Water Column Height: 8.89 ft
Wellbore Radius: 0.333 ft
Gravel Pack Porosity: 0.2

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.01164 ft/min
y0 = 0.2274 ft



FALLING HEAD SLUG TEST SMW26

Data Set: W:\BASF\Riverview\PhaseII\report\uslug0800\smw26f.aqt
Date: 12/24/00 Time: 13:34:51

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: SMW26
Test Date: 08/30/00

AQUIFER DATA

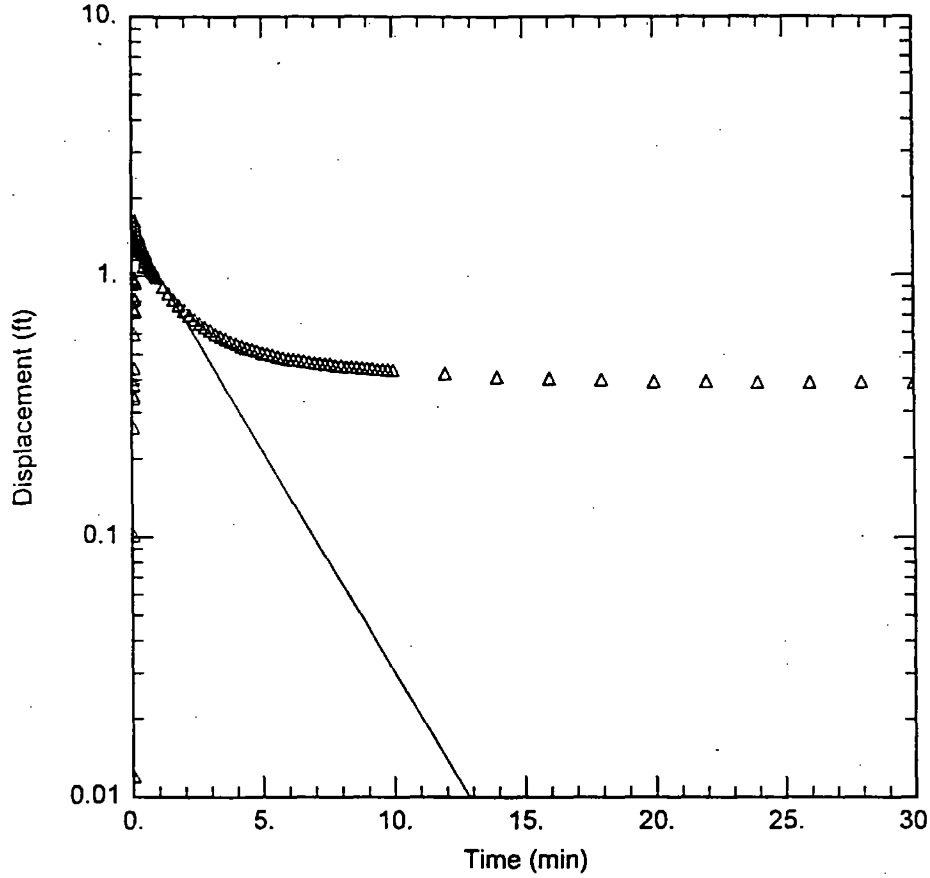
Saturated Thickness: 10.06 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (SMW26)

Initial Displacement: 1.072 ft
Water Column Height: 10.06 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Screen Length: 9.5 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 6.377E-06 ft/min
y0 = 0.6477 ft



FALLING HEAD SLUG TEST SMW27	
Data Set: W:\BASF\Riverview\PhaseII\report\uslug0800\smw27f.aqt	
Date: 12/24/00	Time: 13:36:25

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: SMW27
Test Date: 08/31/00

AQUIFER DATA

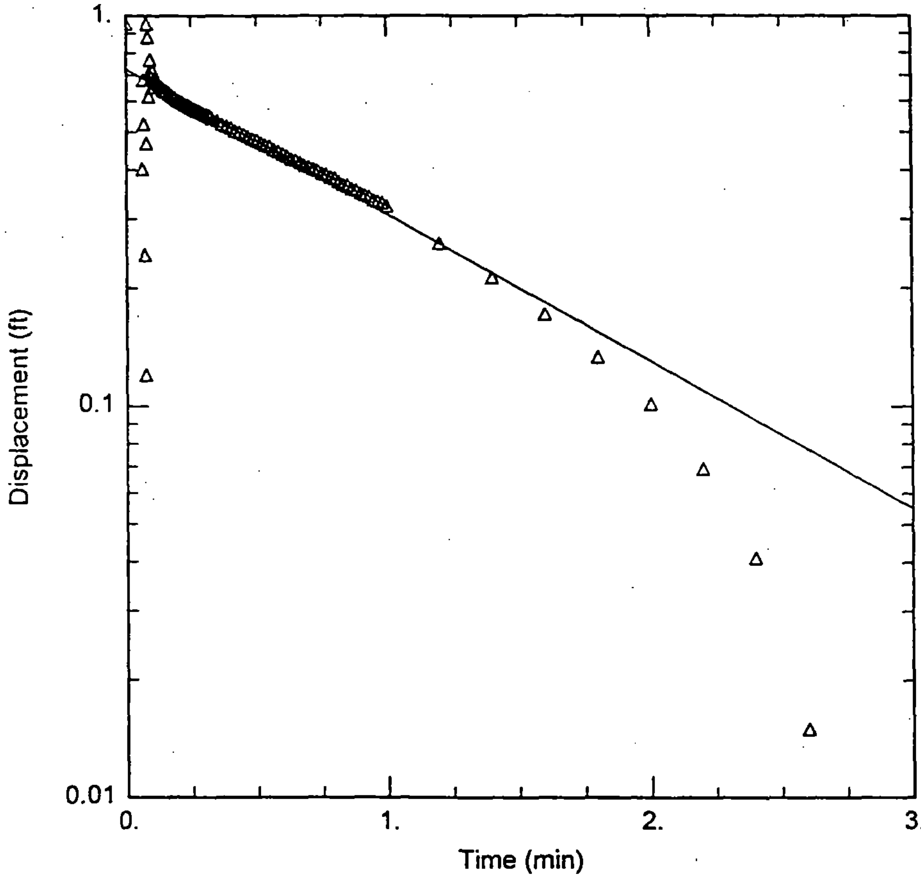
Saturated Thickness: 14.42 ft	Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (SMW27)

Initial Displacement: 1.631 ft	Water Column Height: 14.42 ft
Casing Radius: 0.083 ft	Wellbore Radius: 0.333 ft
Screen Length: 12. ft	

SOLUTION

Aquifer Model: Unconfined	Solution Method: Bouwer-Rice
K = 0.0003177 ft/min	y0 = 1.496 ft



RISING HEAD SLUG TEST SMW27

Data Set: W:\BASF\Riverview\PhaseII\report\uslug0800\smw27r.aqt
Date: 12/24/00 Time: 13:37:06

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: SMW27
Test Date: 08/31/00

AQUIFER DATA

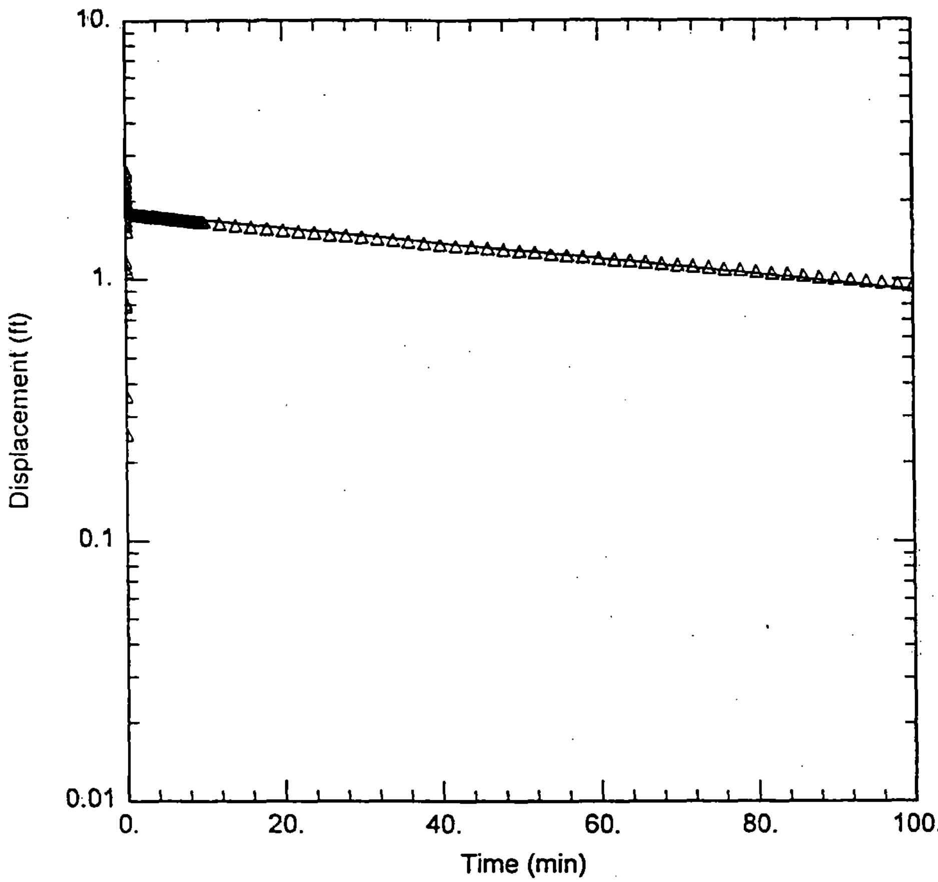
Saturated Thickness: 14.42 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (SMW27)

Initial Displacement: 0.953 ft
Casing Radius: 0.083 ft
Screen Length: 12. ft
Water Column Height: 14.42 ft
Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0007014 ft/min
y0 = 0.7272 ft



FALLING HEAD SLUG TEST PZ1

Data Set: W:\BASF\Riverview\PhaseII\report\pslug0800\pz1f.aqt
Date: 12/24/00 Time: 13:37:48

PROJECT INFORMATION

Company: URS Cororation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: PZ1
Test Date: 08/24/00

AQUIFER DATA

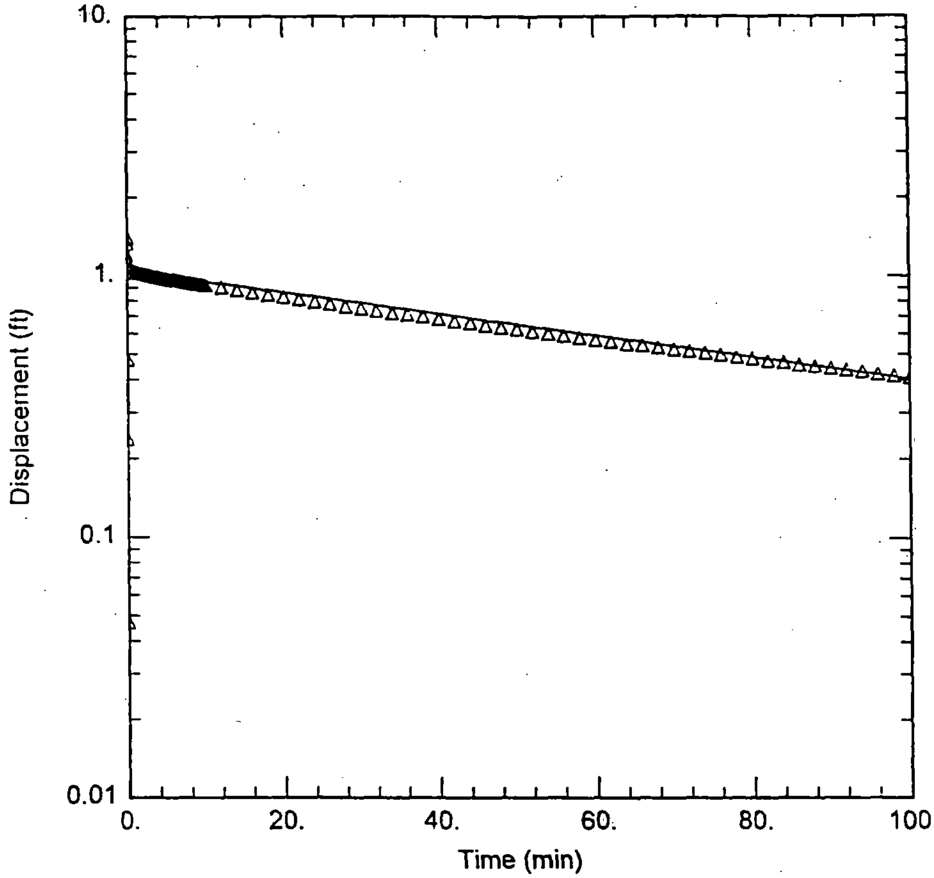
Saturated Thickness: 7.3 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (PZ1)

Initial Displacement: 2.601 ft Water Column Height: 5.3 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.333 ft
Screen Length: 3. ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 1.186E-05 ft/min y0 = 1.803 ft



RISING HEAD SLUG TEST PZ1

Data Set: W:\BASF\Riverview\PhaseII\report\pslug0800\pz1r.aqt
Date: 12/24/00 Time: 13:38:19

PROJECT INFORMATION

Company: URS Corporation
Client: BASF
Project: 38-08E06216.00
Test Location: Riverview, MI
Test Well: PZ1
Test Date: 08/24/00

AQUIFER DATA

Saturated Thickness: 7.3 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (PZ 1)

Initial Displacement: 1.4 ft Water Column Height: 5.3 ft
Casing Radius: 0.083 ft Wellbore Radius: 0.333 ft
Screen Length: 3. ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 1.661E-05 ft/min y0 = 1.044 ft

Appendix E

Table E-1
BASF Riverview, Michigan
Soil Samples
Volatile Organics
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

SAMPLE # / PARAMETER	DMW-09 (02'-04') I997001 7/27/00 mg/kg	DMW-09 (06'-08') I997002 7/27/00 mg/kg	DMW-09 (10'-12') I997003 7/27/00 mg/kg	DMW-09 (26'-28') J007001 8/2/00 mg/kg	DMW-10 (02'-04') J001001 7/31/00 mg/kg	DMW-10 (08'-10') J001002 7/31/00 mg/kg	DMW-10 (10'-12') J001003 7/31/00 mg/kg
1,2-Dichlorobenzene	0.3 ND	0.3 ND	0.3 ND	0.1 ND	0.3 ND	0.2 ND	0.1 ND
1,2-Dichloroethane	0.4 ND	0.4 ND	0.4 ND	0.3 ND	0.4 ND	0.2 ND	0.2 ND
1,2-Dichloropropane	0.2 ND	0.2 ND	0.3 ND	0.2 ND	0.2 ND	0.1 ND	0.09 ND
1,4-Dichlorobenzene	0.2 ND	0.2 ND	0.2 ND	0.08 ND	0.2 ND	0.33	0.08 ND
Acetone	8 ND	3 ND	3 ND	2 ND	3 ND	2 ND	1 ND
Benzene	0.07 ND	0.23	0.08 ND	0.05 ND	0.06 ND	0.19	0.03 ND
Chlorobenzene	0.08 ND	0.08 ND	0.1 ND	0.04 ND	0.08 ND	0.05 ND	0.03 ND
Ethylbenzene	0.2 ND	0.2 ND	0.2 ND	0.09 ND	0.2 ND	0.1 ND	0.07 ND
m,p-Xylene	0.09 ND	0.09 ND	0.1 ND	0.05 ND	0.19	0.23	0.04 ND
Methyl ethyl ketone	2 ND	2 ND	2 ND	1 ND	1 ND	0.8 ND	0.6 ND
Methylene chloride	0.2 ND	0.2 ND	0.2 ND	0.1 ND	0.2 ND	0.1 ND	0.09 ND
o-Xylene	0.09 ND	0.1 ND	0.1 ND	0.06 ND	0.13	0.13	0.04 ND
Styrene	0.09 ND	0.08 ND	0.1 ND	0.33	0.09 ND	0.05 ND	0.04 ND
Tetrachloroethene	0.2 ND	0.2 ND	0.3 ND	0.1 ND	0.2 ND	0.19	0.1 ND
Toluene	0.09 ND	0.2	0.1 ND	0.4	1.2	1.3	0.04 ND
Trichloroethene	0.2 ND	0.2 ND	0.3 ND	0.2 ND	0.2 ND	0.1 ND	0.09 ND
Vinyl chloride	0.1 ND	0.1 ND	0.1 ND	0.09 ND	0.1 ND	0.07 ND	0.05 ND

Table E-1
BASF Riverview, Michiga
Soil Samples
Volatile Organics
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

SAMPLE # / PARAMETER	DMW-10 (24'-26') J007002 8/2/00 mg/kg	DMW-11 (04'-06') J001006 7/31/00 mg/kg	DMW-11 (06'-08') J001008 7/31/00 mg/kg	DMW-11 (24'-26') J008001 8/3/00 mg/kg	DMW-110 (04'-06') J001007 7/31/00 mg/kg	DMW-12 (04'-06') J002007 8/1/00 mg/kg	DMW-12 (06'-08') J002004 8/1/00 mg/kg
1,2-Dichlorobenzene	0.2 ND	0.2 ND	0.2 ND	0.1 ND	0.2 ND	0.1 ND	1.2
1,2-Dichloroethane	0.2 ND	0.2 ND	0.3 ND	0.2 ND	0.2 ND	0.2 ND	0.3 ND
1,2-Dichloropropane	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.2 ND
1,4-Dichlorobenzene	0.1 ND	0.1 ND	0.1 ND	0.07 ND	0.1 ND	0.08 ND	6.8
Acetone	2 ND	2 ND	2 ND	4 ND	440	1 ND	2 ND
Benzene	0.04 ND	0.16	0.05 ND	0.03 ND	0.21	0.03 ND	0.05 ND
Chlorobenzene	0.05 ND	0.05 ND	0.06 ND	0.04 ND	0.05 ND	0.04 ND	0.06 ND
Ethylbenzene	0.1 ND	0.33	0.1 ND	0.08 ND	0.2	0.09 ND	0.1 ND
m,p-Xylene	0.05 ND	1.6	0.37	0.04 ND	0.9	0.04 ND	0.07 ND
Methyl ethyl ketone	2 ND	2 ND	1 ND	1 ND	2 ND	0.7 ND	1 ND
Methylene chloride	0.1 ND	4.5	0.2 ND	0.09 ND	27	0.1 ND	0.1 ND
o-Xylene	0.06 ND	0.47	0.2	0.05 ND	0.25	0.05 ND	0.08 ND
Styrene	0.19	0.06 ND	0.8	0.04 ND	1.2	0.04 ND	0.06 ND
Tetrachloroethene	0.1 ND	0.2 ND	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.2 ND
Toluene	0.23	7.4	1.6	0.04 ND	2.7	0.04 ND	0.07 ND
Trichloroethene	0.1 ND	0.1 ND	4.3	0.1 ND	0.1 ND	0.1 ND	0.2 ND
Vinyl chloride	0.07 ND	0.08 ND	0.72	0.06 ND	0.08 ND	0.06 ND	0.09 ND

Table E-1
BASF Riverview, Michiga
Soil Samples
Volatile Organics
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

SAMPLE # / PARAMETER	DMW-12 (10'-12') J002005 8/1/00 mg/kg	DMW-12 (18'-20') J002006 8/1/00 mg/kg	DMW-12 (28'-30') J008004 8/3/00 mg/kg	DMW-120 (28'-30') J008003 8/3/00 mg/kg	DMW-13 (04'-06') J002001 7/31/00 mg/kg	DMW-13 (06'-08') J002002 7/31/00 mg/kg	DMW-13 (10'-12') J002003 7/31/00 mg/kg
1,2-Dichlorobenzene	0.3 ND	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.2 ND
1,2-Dichloroethane	0.4 ND	0.3 ND	0.2 ND	0.2 ND	0.2 ND	0.3 ND	0.2 ND
1,2-Dichloropropane	0.2 ND	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.71	0.1 ND
1,4-Dichlorobenzene	0.2 ND	0.1 ND	0.08 ND	0.09 ND	0.09 ND	0.1 ND	0.1 ND
Acetone	3 ND	2 ND	3 ND	2 ND	2 ND	2 ND	2 ND
Benzene	0.07 ND	0.05 ND	0.03 ND	0.03 ND	0.04 ND	0.24	0.04 ND
Chlorobenzene	0.08 ND	0.06 ND	0.04 ND	0.04 ND	0.05 ND	0.06 ND	0.05 ND
Ethylbenzene	0.2 ND	0.1 ND	0.09 ND	0.1 ND	0.1 ND	0.2	0.1 ND
m,p-Xylene	0.51	0.06 ND	0.04 ND	0.21	0.05 ND	0.61	0.06 ND
Methyl ethyl ketone	2 ND	1 ND	1 ND	2 ND	0.9 ND	2 ND	1 ND
Methylene chloride	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.1 ND
o-Xylene	0.1 ND	0.07 ND	0.05 ND	0.06 ND	0.06 ND	0.38	0.07 ND
Styrene	0.09 ND	0.06 ND	0.04 ND	0.05 ND	0.05 ND	0.3	0.05 ND
Tetrachloroethene	0.2 ND	0.2 ND	0.1 ND	0.1 ND	0.1 ND	4.6	0.2 ND
Toluene	0.09 ND	0.06 ND	0.04 ND	0.05 ND	0.05 ND	0.66	0.06 ND
Trichloroethene	0.2 ND	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.89	0.1 ND
Vinyl chloride	0.1 ND	0.09 ND	0.06 ND	0.06 ND	0.08 ND	0.1 ND	0.08 ND

Table E-1
BASF Riverview, Michiga
Soil Samples
Volatile Organics
Printed: 1-30-01

URS

DATA SUMMARY
Shrader Lab Packages

SAMPLE # / PARAMETER	DMW-13 (26'-28') J008002 8/3/00 mg/kg	IMW-01 (02'-04') J008010 8/7/00 mg/kg	IMW-01 (06'-08') J008011 8/7/00 mg/kg	IMW-05 (02'-04') J008022 8/8/00 mg/kg	IMW-05 (04'-06') J008021 8/8/00 mg/kg	IMW-06 (02'-04') J008017 8/8/00 mg/kg	IMW-06 (06'-08') J008018 8/8/00 mg/kg
1,2-Dichlorobenzene	0.1 ND	0.1 ND	0.2 ND	0.3 ND	0.2 ND	0.2 ND	0.2 ND
1,2-Dichloroethane	0.2 ND	0.2 ND	0.2 ND	0.3 ND	0.3 ND	0.4 ND	2.5
1,2-Dichloropropane	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.2 ND	0.2 ND	0.69
1,4-Dichlorobenzene	0.07 ND	0.08 ND	0.1 ND	0.2 ND	0.2 ND	0.2 ND	0.1 ND
Acetone	1 ND	20	3 ND	4 ND	4 ND	4 ND	5 ND
Benzene	0.5	0.03 ND	0.04 ND	0.21	0.06 ND	0.07 ND	0.06 ND
Chlorobenzene	0.04 ND	0.04 ND	0.05 ND	0.08 ND	0.08 ND	0.08 ND	0.07 ND
Ethylbenzene	0.66	0.09 ND	0.1 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
m,p-Xylene	1.8	0.05 ND	0.05 ND	0.19	0.2	0.09 ND	0.08 ND
Methyl ethyl ketone	2 ND	1 ND	1 ND	1 ND	1 ND	2 ND	1 ND
Methylene chloride	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
o-Xylene	0.63	0.05 ND	0.07 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
Styrene	0.04 ND	0.04 ND	0.05 ND	0.08 ND	0.08 ND	0.09 ND	0.08 ND
Tetrachloroethene	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
Toluene	0.22	0.05 ND	0.05 ND	0.12	0.22	0.09 ND	0.34
Trichloroethene	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
Vinyl chloride	0.06 ND	0.07 ND	0.08 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND

Table E-1
BASF Riverview, Michiga
Soil Samples
Volatile Organics
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

SAMPLE # / PARAMETER	IMW-060 (06'-08') J008019 8/8/00 mg/kg	SMW-04 (10'-12') J008006 8/4/00 mg/kg	SMW-14 (06'-08') J008009 8/7/00 mg/kg	SMW-15 (04'-06') J008008 8/7/00 mg/kg	SMW-16 (0'-02') J021001 8/9/00 mg/kg	SMW-17 (0'-02') J021002 8/9/00 mg/kg	SMW-18 (0'-02') J021003 8/9/00 mg/kg
1,2-Dichlorobenzene	0.3 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.1 ND
1,2-Dichloroethane	4	0.2 ND	0.2 ND	0.2 ND	0.3 ND	0.2 ND	0.3 ND
1,2-Dichloropropane	0.92	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.2 ND
1,4-Dichlorobenzene	0.2 ND	0.08 ND	0.07 ND	0.08 ND	0.08 ND	0.1 ND	0.06 ND
Acetone	35	2 ND	2 ND	2 ND	2 ND	2 ND	3 ND
Benzene	0.07 ND	0.04 ND	0.04 ND	0.04 ND	0.06 ND	0.04 ND	0.06 ND
Chlorobenzene	0.09 ND	0.04 ND	0.04 ND	0.04 ND	0.04 ND	0.05 ND	0.04 ND
Ethylbenzene	0.2 ND	0.09 ND	0.09 ND	0.1 ND	0.1 ND	0.1 ND	0.36
m,p-Xylene	0.19	0.05 ND	0.04 ND	0.05 ND	0.05 ND	0.05 ND	0.67
Methyl ethyl ketone	2 ND	0.8 ND	2 ND	1 ND	1 ND	0.9 ND	1 ND
Methylene chloride	5.7	30	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.2 ND
o-Xylene	0.1 ND	0.06 ND	0.05 ND	0.06 ND	0.06 ND	0.06 ND	0.52
Styrene	0.09 ND	0.05 ND	0.04 ND	0.05 ND	0.05 ND	0.05 ND	0.04 ND
Tetrachloroethene	0.3 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
Toluene	0.55	0.05 ND	0.04 ND	0.05 ND	0.05 ND	0.05 ND	0.65
Trichloroethene	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.2 ND
Vinyl chloride	1.2	0.07 ND	0.06 ND	0.08 ND	0.1 ND	0.07 ND	0.1 ND

Table E-1
BASF Riverview, Michiga
Soil Samples
Volatile Organics
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

SAMPLE # / PARAMETER	SMW-19 (0'-02') J021004 8/9/00 mg/kg	SMW-20 (04'-06') J008016 8/7/00 mg/kg	SMW-21 (02'-04') J008012 8/7/00 mg/kg	SMW-22 (04'-06') J008013 8/7/00 mg/kg	SMW-23 (04'-06') J008020 8/8/00 mg/kg	TP-1 COMP J069007 8/31/00 mg/kg	TP-2 COMP J069002 8/30/00 mg/kg
1,2-Dichlorobenzene	0.1 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.09 ND	0.1 ND
1,2-Dichloroethane	0.4 ND	0.3 ND	0.3 ND	0.2 ND	0.3 ND	0.2 ND	0.3 ND
1,2-Dichloropropane	0.3 ND	0.2 ND	0.2 ND	0.1 ND	0.2 ND	0.1 ND	0.2 ND
1,4-Dichlorobenzene	0.09 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.05 ND	0.08 ND
Acetone	3 ND	4 ND	5 ND	4 ND	4 ND	3 ND	4 ND
Benzene	0.08 ND	0.05 ND	0.05 ND	0.04 ND	0.05 ND	0.03 ND	0.8
Chlorobenzene	0.06 ND	0.06 ND	0.06 ND	0.05 ND	0.06 ND	0.04 ND	0.05 ND
Ethylbenzene	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.08 ND	0.1 ND
m,p-Xylene	0.06 ND	0.06 ND	0.28	0.05 ND	0.06 ND	0.22	0.18
Methyl ethyl ketone	2 ND	1 ND	2 ND	1 ND	1 ND	1 ND	2 ND
Methylene chloride	0.2 ND	0.1 ND	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
o-Xylene	0.08 ND	0.08 ND	0.08 ND	0.06 ND	0.08 ND	0.11	0.07 ND
Styrene	0.06 ND	0.06 ND	0.07 ND	0.05 ND	0.06 ND	0.04 ND	0.06 ND
Tetrachloroethene	0.2 ND	0.2 ND	0.53	0.1 ND	0.2 ND	0.1 ND	0.2 ND
Toluene	0.06 ND	0.06 ND	1.2	0.05 ND	0.11	0.45	0.42
Trichloroethene	0.3 ND	0.2 ND	0.2 ND	0.1 ND	0.2 ND	0.43	0.2 ND
Vinyl chloride	0.1 ND	0.09 ND	0.1 ND	0.08 ND	0.09 ND	0.06 ND	0.09 ND

Table E-1
BASF Riverview, Michiga
Soil Samples
Volatile Organics
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

SAMPLE # / PARAMETER	TP-3 COMP J069005 8/31/00 mg/kg	TP-30 COMP J069006 8/31/00 mg/kg	TP-4 COMP J069004 8/31/00 mg/kg	TP-5 COMP J069001 8/30/00 mg/kg	TP-6 COMP J069003 8/31/00 mg/kg
1,2-Dichlorobenzene	0.09 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
1,2-Dichloroethane	0.2 ND	0.2 ND	0.3 ND	0.2 ND	0.3 ND
1,2-Dichloropropane	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.2 ND
1,4-Dichlorobenzene	0.05 ND	0.08 ND	0.08 ND	0.07 ND	0.09 ND
Acetone	4 ND	57	4 ND	4 ND	5 ND
Benzene	0.03 ND	0.34	0.05 ND	0.04 ND	0.05 ND
Chlorobenzene	0.04 ND	0.05 ND	0.05 ND	0.04 ND	0.05 ND
Ethylbenzene	0.77	2.8	0.1 ND	0.1 ND	0.1 ND
m,p-Xylene	2.3	6.2	0.06 ND	0.05 ND	0.06 ND
Methyl ethyl ketone	2 ND	1 ND	2 ND	1 ND	2 ND
Methylene chloride	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
o-Xylene	1.1	2.9	0.07 ND	0.06 ND	0.06 ND
Styrene	0.04 ND	0.05 ND	0.06 ND	0.05 ND	0.06 ND
Tetrachloroethene	0.1 ND	0.67	0.2 ND	0.1 ND	0.2 ND
Toluene	1.6	3.7	0.06 ND	0.05 ND	0.06 ND
Trichloroethene	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.2 ND
Vinyl chloride	0.06 ND	0.08 ND	0.09 ND	0.08 ND	0.09 ND

Table E-1
BASF Riverview, Michigan
Soil Samples
Volatile Organics
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

SAMPLE # / PARAMETER	IMW-060 (06'-08') J008019 8/8/00 mg/kg	SMW-04 (10'-12') J008006 8/4/00 mg/kg	SMW-14 (06'-08') J008009 8/7/00 mg/kg	SMW-15 (04'-06') J008008 8/7/00 mg/kg	SMW-16 (0'-02') J021001 8/9/00 mg/kg	SMW-17 (0'-02') J021002 8/9/00 mg/kg	SMW-18 (0'-02') J021003 8/9/00 mg/kg
1,2-Dichlorobenzene	0.3 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.1 ND
1,2-Dichloroethane	4	0.2 ND	0.2 ND	0.2 ND	0.3 ND	0.2 ND	0.3 ND
1,2-Dichloropropane	0.92	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.2 ND
1,4-Dichlorobenzene	0.2 ND	0.08 ND	0.07 ND	0.08 ND	0.08 ND	0.1 ND	0.06 ND
Acetone	35	2 ND	2 ND	2 ND	2 ND	2 ND	3 ND
Benzene	0.07 ND	0.04 ND	0.04 ND	0.04 ND	0.06 ND	0.04 ND	0.06 ND
Chlorobenzene	0.09 ND	0.04 ND	0.04 ND	0.04 ND	0.04 ND	0.05 ND	0.04 ND
Ethylbenzene	0.2 ND	0.09 ND	0.09 ND	0.1 ND	0.1 ND	0.1 ND	0.36
m,p-Xylene	0.19	0.05 ND	0.04 ND	0.05 ND	0.05 ND	0.05 ND	0.67
Methyl ethyl ketone	2 ND	0.8 ND	2 ND	1 ND	1 ND	0.9 ND	1 ND
Methylene chloride	5.7	30	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.2 ND
o-Xylene	0.1 ND	0.06 ND	0.05 ND	0.06 ND	0.06 ND	0.06 ND	0.52
Styrene	0.09 ND	0.05 ND	0.04 ND	0.05 ND	0.05 ND	0.05 ND	0.04 ND
Tetrachloroethene	0.3 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
Toluene	0.55	0.05 ND	0.04 ND	0.05 ND	0.05 ND	0.05 ND	0.65
Trichloroethene	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.2 ND
Vinyl chloride	1.2	0.07 ND	0.06 ND	0.08 ND	0.1 ND	0.07 ND	0.1 ND

Table E-1
BASF Riverview, Michigan
Soil Samples
Volatile Organics
Printed: 1-30-01

URS

DATA SUMMARY
Shrader Lab Packages

SAMPLE # / PARAMETER	SMW-19 (0'-02') J021004 8/9/00 mg/kg	SMW-20 (04'-06') J008016 8/7/00 mg/kg	SMW-21 (02'-04') J008012 8/7/00 mg/kg	SMW-22 (04'-06') J008013 8/7/00 mg/kg	SMW-23 (04'-06') J008020 8/8/00 mg/kg	TP-1 COMP J069007 8/31/00 mg/kg	TP-2 COMP J069002 8/30/00 mg/kg
1,2-Dichlorobenzene	0.1 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.09 ND	0.1 ND
1,2-Dichloroethane	0.4 ND	0.3 ND	0.3 ND	0.2 ND	0.3 ND	0.2 ND	0.3 ND
1,2-Dichloropropane	0.3 ND	0.2 ND	0.2 ND	0.1 ND	0.2 ND	0.1 ND	0.2 ND
1,4-Dichlorobenzene	0.09 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.05 ND	0.08 ND
Acetone	3 ND	4 ND	5 ND	4 ND	4 ND	3 ND	4 ND
Benzene	0.08 ND	0.05 ND	0.05 ND	0.04 ND	0.05 ND	0.03 ND	0.8
Chlorobenzene	0.06 ND	0.06 ND	0.06 ND	0.05 ND	0.06 ND	0.04 ND	0.05 ND
Ethylbenzene	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.08 ND	0.1 ND
m,p-Xylene	0.06 ND	0.06 ND	0.28	0.05 ND	0.06 ND	0.22	0.18
Methyl ethyl ketone	2 ND	1 ND	2 ND	1 ND	1 ND	1 ND	2 ND
Methylene chloride	0.2 ND	0.1 ND	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
o-Xylene	0.08 ND	0.08 ND	0.08 ND	0.06 ND	0.08 ND	0.11	0.07 ND
Styrene	0.06 ND	0.06 ND	0.07 ND	0.05 ND	0.06 ND	0.04 ND	0.06 ND
Tetrachloroethene	0.2 ND	0.2 ND	0.53	0.1 ND	0.2 ND	0.1 ND	0.2 ND
Toluene	0.06 ND	0.06 ND	1.2	0.05 ND	0.11	0.45	0.42
Trichloroethene	0.3 ND	0.2 ND	0.2 ND	0.1 ND	0.2 ND	0.43	0.2 ND
Vinyl chloride	0.1 ND	0.09 ND	0.1 ND	0.08 ND	0.09 ND	0.06 ND	0.09 ND

Table E-1
BASF Riverview, Michigan
Soil Samples
Volatile Organics
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

SAMPLE # / PARAMETER	TP-3 COMP J069005 8/31/00 mg/kg	TP-30 COMP J069006 8/31/00 mg/kg	TP-4 COMP J069004 8/31/00 mg/kg	TP-5 COMP J069001 8/30/00 mg/kg	TP-6 COMP J069003 8/31/00 mg/kg
1,2-Dichlorobenzene	0.09 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
1,2-Dichloroethane	0.2 ND	0.2 ND	0.3 ND	0.2 ND	0.3 ND
1,2-Dichloropropane	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.2 ND
1,4-Dichlorobenzene	0.05 ND	0.08 ND	0.08 ND	0.07 ND	0.09 ND
Acetone	4 ND	57	4 ND	4 ND	5 ND
Benzene	0.03 ND	0.34	0.05 ND	0.04 ND	0.05 ND
Chlorobenzene	0.04 ND	0.05 ND	0.05 ND	0.04 ND	0.05 ND
Ethylbenzene	0.77	2.8	0.1 ND	0.1 ND	0.1 ND
m,p-Xylene	2.3	6.2	0.06 ND	0.05 ND	0.06 ND
Methyl ethyl ketone	2 ND	1 ND	2 ND	1 ND	2 ND
Methylene chloride	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
o-Xylene	1.1	2.9	0.07 ND	0.06 ND	0.06 ND
Styrene	0.04 ND	0.05 ND	0.06 ND	0.05 ND	0.06 ND
Tetrachloroethene	0.1 ND	0.67	0.2 ND	0.1 ND	0.2 ND
Toluene	1.6	3.7	0.06 ND	0.05 ND	0.06 ND
Trichloroethene	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.2 ND
Vinyl chloride	0.06 ND	0.08 ND	0.09 ND	0.08 ND	0.09 ND

Table E-1
BASF Riverview, Michigan
Soil Samples
Semivolatile Organics
Printed: 1-30-01

URS

DATA SUMMARY
Shrader Lab Packages

SAMPLE # / PARAMETER	DMW-09 (02'-04') I997001 7/27/00 mg/kg	DMW-09 (06'-08') I997002 7/27/00 mg/kg	DMW-09 (10'-12') I997003 7/27/00 mg/kg	DMW-09 (26'-28') J007001 8/2/00 mg/kg	DMW-10 (02'-04') J001001 7/31/00 mg/kg	DMW-10 (08'-10') J001002 7/31/00 mg/kg	DMW-10 (10'-12') J001003 7/31/00 mg/kg
1,2,4,5-Tetrachlorobenzene	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.1 ND
1,2,4-Trichlorobenzene	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.1 ND
2,4,6-Trichlorophenol	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.1 ND
2,4-Dichlorophenol	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.1 ND
2,4-Dimethylphenol	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.1 ND
2-Chlorophenol	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.1 ND
Acenaphthene	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.247	0.1 ND
Aniline	0.3 ND	0.2 ND	0.3 ND	0.1 ND	0.3 ND	0.3 ND	0.3 ND
Benzo(a)pyrene	0.1 ND	0.122	0.1 ND	0.1 ND	0.636	0.812	0.1 ND
bis(2-Ethylhexyl)phthalate	0.1 ND	0.277	0.1 ND	0.1 ND	1.66	12.2	0.1 ND
Carbazole	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.29	0.915	0.1 ND
Di-n-butyl phthalate	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.1 ND
Dibenzofuran	0.1 ND	0.12	0.1 ND	0.1 ND	0.546	1.19	0.1 ND
Fluoranthene	0.102	0.564	0.1 ND	0.1 ND	2.4	3.17	0.1 ND
Fluorene	0.1 ND	0.185	0.1 ND	0.1 ND	0.214	1.08	0.1 ND
Hexachlorobutadiene	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.3 ND	0.1 ND
Hexachloroethane	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.5 ND	0.1 ND
Isophorone	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.1 ND
m,p-Cresol	0.1 ND	0.1 ND	0.1 ND	0.4 ND	0.1 ND	0.2 ND	0.1 ND
Naphthalene	0.1 ND	0.547	0.1 ND	0.1 ND	0.797	7.88	0.102
o-Cresol	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.1 ND
Pentachlorophenol	0.3 ND	0.2 ND	0.3 ND	0.3 ND	0.3 ND	0.3 ND	0.3 ND
Phenanthrene	0.1 ND	0.704	0.1 ND	0.1 ND	2.65	4.58	0.1 ND
Phenol	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.1 ND

Table E-1
BASF Riverview, Michigan
Soil Samples
Semivolatile Organics
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

SAMPLE # / PARAMETER	DMW-10 (24'-26') J007002 8/2/00 mg/kg	DMW-11 (04'-06') J001006 7/31/00 mg/kg	DMW-11 (06'-08') J001008 7/31/00 mg/kg	DMW-11 (24'-26') J008001 8/3/00 mg/kg	DMW-110 (04'-06') J001007 7/31/00 mg/kg	DMW-12 (04'-06') J002007 8/1/00 mg/kg	DMW-12 (06'-08') J002004 8/1/00 mg/kg
1,2,4,5-Tetrachlorobenzene	0.1 ND	0.2 ND	0.1 ND	0.08 ND	0.1 ND	0.1 ND	0.1 ND
1,2,4-Trichlorobenzene	0.1 ND	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
2,4,6-Trichlorophenol	0.1 ND	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
2,4-Dichlorophenol	0.1 ND	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
2,4-Dimethylphenol	0.1 ND	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
2-Chlorophenol	0.1 ND	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
Acenaphthene	0.1 ND	0.464	6.59	0.1 ND	0.109	0.1 ND	0.1 ND
Aniline	0.1 ND	0.3 ND	0.3 ND	0.1 ND	0.3 ND	0.1 ND	0.1 ND
Benzo(a)pyrene	0.1 ND	2.12	18	0.1 ND	0.297	0.1 ND	0.35
bis(2-Ethylhexyl)phthalate	0.1 ND	0.931	0.5 ND	0.3 ND	0.422	0.1 ND	0.1 ND
Carbazole	0.1 ND	0.456	6.32	0.1 ND	0.169	0.1 ND	0.1 ND
Di-n-butyl phthalate	0.1 ND	0.2 ND	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
Dibenzofuran	0.1 ND	0.71	4.56	0.1 ND	0.229	0.1 ND	0.256
Fluoranthene	0.1 ND	5.48	49.7	0.1 ND	1.21	0.1 ND	0.81
Fluorene	0.1 ND	0.982	6.1	0.1 ND	0.328	0.1 ND	0.191
Hexachlorobutadiene	0.1 ND	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
Hexachloroethane	0.1 ND	0.2 ND	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
Isophorone	0.1 ND	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
m,p-Cresol	0.4 ND	0.2 ND	0.551	0.3 ND	0.1 ND	0.3 ND	0.4 ND
Naphthalene	0.1 ND	1.52	7.57	0.1 ND	0.906	0.1 ND	0.192
o-Cresol	0.1 ND	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
Pentachlorophenol	0.2 ND	0.3 ND	0.3 ND	0.2 ND	0.3 ND	0.2 ND	0.3 ND
Phenanthrene	0.1 ND	5.11	44.7	0.1 ND	1.53	0.1 ND	1.28
Phenol	0.1 ND	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.134

Table E-1
BASF Riverview, Michigan
Soil Samples
Semivolatile Organics
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

SAMPLE # / PARAMETER	DMW-12 (10'-12') J002005 8/1/00 mg/kg	DMW-12 (18'-20') J002006 8/1/00 mg/kg	DMW-12 (28'-30') J008004 8/3/00 mg/kg	DMW-120 (28'-30') J008003 8/3/00 mg/kg	DMW-13 (04'-06') J002001 7/31/00 mg/kg	DMW-13 (06'-08') J002002 7/31/00 mg/kg	DMW-13 (10'-12') J002003 7/31/00 mg/kg
1,2,4,5-Tetrachlorobenzene	0.2 ND	0.1 ND	0.08 ND	0.09 ND	0.1 ND	0.1 ND	0.1 ND
1,2,4-Trichlorobenzene	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
2,4,6-Trichlorophenol	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.2 ND	0.1 ND
2,4-Dichlorophenol	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
2,4-Dimethylphenol	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
2-Chlorophenol	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
Acenaphthene	1.11	0.1 ND	0.1 ND	0.1 ND	0.1 ND	5.74	0.185
Aniline	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
Benzo(a)pyrene	3.72	0.1 ND	0.1 ND	0.1 ND	0.1 ND	10.3	0.797
bis(2-Ethylhexyl)phthalate	2 ND	0.1 ND	0.4 ND	0.4 ND	0.6 ND	0.5 ND	0.1 ND
Carbazole	1.21	0.1 ND	0.1 ND	0.1 ND	0.1 ND	4.27	0.28
Di-n-butyl phthalate	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
Dibenzofuran	3.65	0.1 ND	0.1 ND	0.1 ND	0.1 ND	35.8	0.968
Fluoranthene	14.3	0.1 ND	0.1 ND	0.1 ND	0.151	67	2.31
Fluorene	3.21	0.1 ND	0.1 ND	0.1 ND	0.1 ND	35.2	1.05
Hexachlorobutadiene	0.2 ND	0.1 ND	0.1 ND	0.2 ND	0.1 ND	38.2	0.1 ND
Hexachloroethane	0.3 ND	0.2 ND	0.2 ND	0.2 ND	0.1 ND	0.3 ND	0.1 ND
Isophorone	8.6	0.1 ND	0.1 ND	2.94	0.1 ND	0.1 ND	0.1 ND
m,p-Cresol	0.5 ND	0.4 ND	0.4 ND	0.4 ND	0.4 ND	0.49	0.4 ND
Naphthalene	2.29	0.1 ND	0.1 ND	0.1 ND	0.1 ND	176	3.14
o-Cresol	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
Pentachlorophenol	0.3 ND	0.3 ND	0.2 ND	0.2 ND	0.2 ND	0.3 ND	0.3 ND
Phenanthrene	20.3	0.1 ND	0.1 ND	0.1 ND	0.114	100	3.11
Phenol	0.873	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.37	0.1 ND

Table E-1
BASF Riverview, Michigan
Soil Samples
Semivolatile Organics
Printed: 1-30-01

URS

DATA SUMMARY
Shrader Lab Packages

SAMPLE # / PARAMETER	DMW-13 (26'-28') J008002 8/3/00 mg/kg	IMW-01 (02'-04') J008010 8/7/00 mg/kg	IMW-01 (06'-08') J008011 8/7/00 mg/kg	IMW-05 (02'-04') J008022 8/8/00 mg/kg	IMW-05 (04'-06') J008021 8/8/00 mg/kg	IMW-06 (02'-04') J008017 8/8/00 mg/kg	IMW-06 (06'-08') J008018 8/8/00 mg/kg
1,2,4,5-Tetrachlorobenzene	0.08 ND	0.08 ND	0.1 ND	0.2 ND	0.6 ND	0.2 ND	0.1 ND
1,2,4-Trichlorobenzene	0.1 ND	0.1 ND	0.2 ND	0.3 ND	0.6 ND	0.2 ND	0.2 ND
2,4,6-Trichlorophenol	0.1 ND	0.1 ND	0.2 ND	0.3 ND	0.9 ND	0.2 ND	0.2 ND
2,4-Dichlorophenol	0.1 ND	0.1 ND	0.2 ND	0.3 ND	0.6 ND	0.2 ND	0.2 ND
2,4-Dimethylphenol	0.1 ND	0.1 ND	0.2 ND	0.2 ND	0.5 ND	0.2 ND	0.2 ND
2-Chlorophenol	0.1 ND	0.1 ND	0.2 ND	0.3 ND	1 ND	0.2 ND	0.3 ND
Acenaphthene	0.1 ND	0.1 ND	0.2 ND	0.2 ND	0.3 ND	0.2 ND	0.532
Aniline	0.1 ND	0.1 ND	0.2 ND	0.2 ND	0.5 ND	0.2 ND	0.2 ND
Benzo(a)pyrene	0.1 ND	0.1 ND	0.222	4.1	2.56	0.2 ND	7.04
bis(2-Ethylhexyl)phthalate	0.3 ND	0.697	0.6 ND	0.7 ND	0.7 ND	0.5 ND	0.5 ND
Carbazole	0.1 ND	0.1 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	1.57
Di-n-butyl phthalate	0.1 ND	0.1 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
Dibenzofuran	0.1 ND	0.1 ND	0.2 ND	0.343	1.05	0.2 ND	2.44
Fluoranthene	0.1 ND	0.1 ND	0.371	5.52	3.92	0.346	16.3
Fluorene	0.1 ND	0.1 ND	0.2 ND	0.74	1.21	0.2 ND	3.68
Hexachlorobutadiene	0.1 ND	0.1 ND	0.3 ND	0.5 ND	1 ND	0.2 ND	0.3 ND
Hexachloroethane	0.1 ND	0.2 ND	0.2 ND	0.7 ND	2 ND	0.3 ND	0.5 ND
Isophorone	0.1 ND	0.1 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
m,p-Cresol	0.3 ND	0.3 ND	0.6 ND	0.7 ND	0.9 ND	0.5 ND	0.5 ND
Naphthalene	0.1 ND	0.1 ND	0.2 ND	0.639	2.41	0.441	6.06
o-Cresol	0.1 ND	0.1 ND	0.2 ND	0.3 ND	0.8 ND	0.2 ND	0.2 ND
Pentachlorophenol	0.2 ND	0.2 ND	0.4 ND	0.5 ND	1 ND	0.3 ND	0.3 ND
Phenanthrene	0.1 ND	0.1 ND	0.323	1.85	3.16	0.694	18.6
Phenol	0.1 ND	0.1 ND	0.2 ND	0.2 ND	0.6 ND	0.2 ND	0.2 ND

Table E-1
BASF Riverview, Michigan
Soil Samples
Semivolatile Organics
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

SAMPLE # / PARAMETER	IMW-060 (06'-08') J008019 8/8/00 mg/kg	SMW-04 (10'-12') J008006 8/4/00 mg/kg	SMW-14 (06'-08') J008009 8/7/00 mg/kg	SMW-15 (04'-06') J008008 8/7/00 mg/kg	SMW-16 (0'-02') J021001 8/9/00 mg/kg	SMW-17 (0'-02') J021002 8/9/00 mg/kg	SMW-18 (0'-02') J021003 8/9/00 mg/kg
1,2,4,5-Tetrachlorobenzene	0.2 ND	0.1 ND	0.08 ND	0.09 ND	0.1 ND	0.1 ND	0.1 ND
1,2,4-Trichlorobenzene	0.3 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
2,4,6-Trichlorophenol	0.3 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
2,4-Dichlorophenol	0.3 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
2,4-Dimethylphenol	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
2-Chlorophenol	0.3 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
Acenaphthene	0.393	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.159	0.1 ND
Aniline	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
Benzo(a)pyrene	2.13	0.1 ND	0.1 ND	0.1 ND	1.41	1.35	0.226
bis(2-Ethylhexyl)phthalate	0.7 ND	0.4 ND	0.4 ND	0.4 ND	0.1 ND	0.1 ND	0.1 ND
Carbazole	0.995	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.114	0.1 ND
Di-n-butyl phthalate	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
Dibenzofuran	1.88	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.156	0.1 ND
Fluoranthene	4.64	0.376	0.151	0.1 ND	1.95	2.29	0.333
Fluorene	1.97	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.116	0.1 ND
Hexachlorobutadiene	0.5 ND	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
Hexachloroethane	0.6 ND	0.3 ND	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
Isophorone	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
m,p-Cresol	0.7 ND	0.4 ND	0.4 ND	0.4 ND	0.3 ND	0.4 ND	0.3 ND
Naphthalene	10	0.223	0.237	0.1 ND	0.1 ND	0.167	0.213
o-Cresol	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND
Pentachlorophenol	0.5 ND	0.3 ND	0.2 ND	0.3 ND	0.2 ND	0.2 ND	0.2 ND
Phenanthrene	6.65	0.5	0.21	0.1 ND	0.979	1.21	0.34
Phenol	0.542	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND	0.1 ND

Table E-1
BASF Riverview, Michigan
Soil Samples
Semivolatile Organics
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

SAMPLE # / PARAMETER	SMW-19 (0'-02') J021004 8/9/00 mg/kg	SMW-20 (04'-06') J008016 8/7/00 mg/kg	SMW-21 (02'-04') J008012 8/7/00 mg/kg	SMW-22 (04'-06') J008013 8/7/00 mg/kg	SMW-23 (04'-06') J008020 8/8/00 mg/kg	TP-1 COMP J069007 8/31/00 mg/kg	TP-2 COMP J069002 8/30/00 mg/kg
1,2,4,5-Tetrachlorobenzene	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.08 ND	0.1 ND	0.2 ND
1,2,4-Trichlorobenzene	0.1 ND	0.1 ND	0.3 ND	0.2 ND	0.2 ND	0.118	0.2 ND
2,4,6-Trichlorophenol	0.1 ND	0.2 ND	0.3 ND	0.1 ND	0.1 ND	0.1 ND	0.2 ND
2,4-Dichlorophenol	0.1 ND	0.1 ND	0.3 ND	0.2 ND	0.2 ND	0.1 ND	0.2 ND
2,4-Dimethylphenol	0.1 ND	0.1 ND	0.2 ND	0.2 ND	0.2 ND	0.1 ND	0.2 ND
2-Chlorophenol	0.1 ND	0.1 ND	0.3 ND	0.2 ND	0.2 ND	0.1 ND	0.2 ND
Acenaphthene	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.296
Aniline	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.2 ND
Benzo(a)pyrene	0.1 ND	0.665	0.2 ND	3.75	0.896	2.33	1.18
bis(2-Ethylhexyl)phthalate	0.606	612	0.5 ND	0.3 ND	0.3 ND	1.47	0.2 ND
Carbazole	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.108	0.1 ND	0.883
Di-n-butyl phthalate	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.2 ND
Dibenzofuran	0.1 ND	0.1 ND	0.2 ND	0.252	0.1 ND	0.42	1.76
Fluoranthene	0.406	0.781	0.366	1.47	2.33	3.21	6.26
Fluorene	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.1 ND	0.229	2.06
Hexachlorobutadiene	0.2 ND	0.2 ND	0.5 ND	0.3 ND	0.3 ND	0.1 ND	0.2 ND
Hexachloroethane	0.2 ND	0.3 ND	0.5 ND	0.4 ND	0.3 ND	0.1 ND	0.2 ND
Isophorone	0.1 ND	0.1 ND	0.2 ND	0.44	0.1 ND	0.1 ND	0.2 ND
m,p-Cresol	0.3 ND	0.3 ND	0.5 ND	0.3 ND	0.3 ND	0.4 ND	0.5 ND
Naphthalene	0.323	0.308	0.2 ND	0.853	0.127	0.969	5.78
o-Cresol	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.2 ND
Pentachlorophenol	0.2 ND	0.2 ND	0.4 ND	0.2 ND	0.2 ND	0.2 ND	0.3 ND
Phenanthrene	0.39	0.491	0.268	0.945	1.53	2.36	9.77
Phenol	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.1 ND	0.1 ND	0.618

Table E-1
BASF Riverview, Michigan
Soil Samples
Semivolatile Organics
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

SAMPLE # / PARAMETER	TP-3 COMP J069005 8/31/00 mg/kg	TP-30 COMP J069006 8/31/00 mg/kg	TP-4 COMP J069004 8/31/00 mg/kg	TP-5 COMP J069001 8/30/00 mg/kg	TP-6 COMP J069003 8/31/00 mg/kg
1,2,4,5-Tetrachlorobenzene	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.3 ND
1,2,4-Trichlorobenzene	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.3 ND
2,4,6-Trichlorophenol	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.623
2,4-Dichlorophenol	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.3 ND
2,4-Dimethylphenol	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.3 ND
2-Chlorophenol	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.3 ND
Acenaphthene	0.195	0.1 ND	1.71	0.1 ND	0.3 ND
Aniline	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.3 ND
Benzo(a)pyrene	1.19	0.366	15.4	3.64	2.42
bis(2-Ethylhexyl)phthalate	2.19	0.829	0.87	0.932	8.65
Carbazole	0.762	0.254	7.97	0.642	0.948
Di-n-butyl phthalate	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.3 ND
Dibenzofuran	1.62	0.516	18.2	1.25	2.19
Fluoranthene	4.16	1.4	39.8	7.88	7.68
Fluorene	1.86	0.568	24	1.11	2.25
Hexachlorobutadiene	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.3 ND
Hexachloroethane	0.2 ND	0.1 ND	0.2 ND	0.1 ND	0.3 ND
Isophorone	0.1 ND	0.1 ND	0.2 ND	0.1 ND	0.3 ND
m,p-Cresol	0.612	0.4 ND	1.08	0.4 ND	0.8 ND
Naphthalene	9.13	2.25	41.5	3.74	10.9
o-Cresol	0.1 ND	0.1 ND	0.238	0.1 ND	0.3 ND
Pentachlorophenol	0.2 ND	0.3 ND	0.5 ND	0.3 ND	0.5 ND
Phenanthrene	5.45	1.85	49.4	7.51	10.2
Phenol	0.799	0.296	1.44	0.1 ND	0.3 ND

Table E-1
BASF Riverview, Michigan
Soil Samples
PCBs, Metals, Inorganics, General Chemistry
Printed: 1-30-01

URS

DATA SUMMARY
Shrader Lab Packages

	SAMPLE # / PARAMETER	DMW-09 (02'-04') I997001 7/27/00	DMW-09 (06'-08') I997002 7/27/00	DMW-09 (10'-12') I997003 7/27/00	DMW-09 (26'-28') J007001 8/2/00	DMW-10 (02'-04') J001001 7/31/00	DMW-10 (08'-10') J001002 7/31/00
PCBs (mg/kg)	Arochlor-1242	0.33 ND	0.33 ND	0.33 ND	0.33 ND	ND	0.33 ND
	Arochlor-1248	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Arochlor-1254	0.33 ND	0.33 ND	0.33 ND	0.33 ND	2.84	2.23
	Arochlor-1260	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Total PCBs	0.33 ND	0.33 ND	0.33 ND	0.33 ND	2.84	2.23
Metals (mg/kg)	Arsenic	11.3	3.6	7.9	9.3	43.3	17.2
	Barium	61.3	108	116	65.6	142	262
	Cadmium	0.2	0.5	0.13	0.2	1.5	1.5
	Chromium	18.4	16.2	30.4	15.6	23.9	35.4
	Copper	36.4	19.3	26.8	21.4	129	54
	Lead	35.1	38	13.6	9.6	210	220
	Mercury	0.79	0.62	0.05 ND	0.05 ND	3.61	9.74
	Selenium	1.2	0.3 ND	0.3 ND	1 ND	0.8	0.8
	Sodium	1020	2890	2850	696	8490	10100
	Zinc	41.6	70.9	93.5	57.5	212	275
Inorganics (mg/kg)	Cyanide, Total	2.76	0.89	0.1 ND	2290 ND	2.91	1.04
	Nitrogen, Ammonia	17 ND	50	17 ND	60	17	60
General Chemistry	Chloride (mg/kg)	1110	1530	3160	650	3020	1630
	pH at 25 deg C	12.5	12.4	8.4	8.2	11.5	12
	Sulfate (mg/kg)	19400	2960	1650	2	7730	3510

Table E-1
BASF Riverview, Michigan
Soil Samples
PCBs, Metals, Inorganics, General Chemistry
Printed: 1-30-01

URS

DATA SUMMARY
Shrader Lab Packages

	SAMPLE # / PARAMETER	DMW-10 (10'-12') J001003 7/31/00	DMW-10 (24'-26') J007002 8/2/00	DMW-11 (04'-06') J001006 7/31/00	DMW-11 (06'-08') J001008 7/31/00	DMW-11 (24'-26') J008001 8/3/00	DMW-110 (04'-06') J001007 7/31/00
PCBs (mg/kg)	Arochlor-1242	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Arochlor-1248	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Arochlor-1254	0.33 ND	0.33 ND	1.4	0.33 ND	0.33 ND	0.715
	Arochlor-1260	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Total PCBs	0.33 ND	0.33 ND	1.4	0.33 ND	0.33 ND	0.715
Metals (mg/kg)	Arsenic	10.3	7.5	6.6	6.2	6.9	7.9
	Barium	110	64.6	136	171	65.6	122
	Cadmium	0.29	0.2	0.8	3	0.2	0.6
	Chromium	30.2	15.4	31.4	89.2	15.4	19
	Copper	19.6	21.2	38.2	116	21.4	32
	Lead	16.2	9	158	111	8.2	62.8
	Mercury	0.21	0.05 ND	5.25	5.77	0.05 ND	2.52
	Selenium	0.3 ND	1 ND	0.8	1.3	0.2 ND	0.3 ND
	Sodium	1630	688	10800	14500	636	9050
	Zinc	76	46.6	238	783	46	120
Inorganics (mg/kg)	Cyanide, Total	0.206	0.1 ND	1.61	3.16	0.2 ND	0.506
	Nitrogen, Ammonia	30	17	17 ND	23	16 ND	17 ND
General Chemistry	Chloride (mg/kg)	2550	888	1810	2870	1630	1590
	pH at 25 deg C	8.4	7.9	12.1	12	7.94	12.1
	Sulfate (mg/kg)	1590	1430	3560	2420	2630	3600

Table E-1
BASF Riverview, Michigan
Soil Samples
PCBs, Metals, Inorganics, General Chemistry
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

	SAMPLE # / PARAMETER	DMW-12 (04'-06') J002007 8/1/00	DMW-12 (06'-08') J002004 8/1/00	DMW-12 (10'-12') J002005 8/1/00	DMW-12 (18'-20') J002006 8/1/00	DMW-12 (28'-30') J008004 8/3/00	DMW-120 (28'-30') J008003 8/3/00
PCBs (mg/kg)	Arochlor-1242	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Arochlor-1248	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Arochlor-1254	0.33 ND	0.94	5.01	0.33 ND	0.33 ND	0.33 ND
	Arochlor-1260	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Total PCBs	0.33 ND	0.94	5.01	0.33 ND	0.33 ND	0.33 ND
Metals (mg/kg)	Arsenic	1.3	17.3	20	8.9	7.6	6.8
	Barium	3.5	138	118	50	69.4	64
	Cadmium	0.08	2.6	1.4	0.4	0.2	0.2
	Chromium	1.5	31.3	40.4	17.8	16.9	18.1
	Copper	3.8	288	151	23.9	22.3	23.8
	Lead	3.9	387	805	14.9	10.3	8.1
	Mercury	0.15	2.19	0.25	0.1	0.05 ND	0.05 ND
	Selenium	0.5 ND	0.7	1.2	1 ND	0.2 ND	0.2 ND
	Sodium	655	7520	25800	4890	631	629
	Zinc	5.8	298	230	62.7	47.9	52.6
Inorganics (mg/kg)	Cyanide, Total	0.1 ND	2.82	1.72	0.446	0.2 ND	6.1
	Nitrogen, Ammonia	17 ND	27	30	50	16 ND	16
General Chemistry	Chloride (mg/kg)	1590	2620	1440	2450	1400	1580
	pH at 25 deg C	9.6	10.8	10.9	9.7	8.14	7.8
	Sulfate (mg/kg)	2080	3290	2530	1730	1100	1940

Table E-1
BASF Riverview, Michigan
Soil Samples
PCBs, Metals, Inorganics, General Chemistry
Printed: 1-30-01

URS

DATA SUMMARY
Shrader Lab Packages

	SAMPLE # / PARAMETER	DMW-13 (04'-06') J002001 7/31/00	DMW-13 (06'-08') J002002 7/31/00	DMW-13 (10'-12') J002003 7/31/00	DMW-13 (26'-28') J008002 8/3/00	IMW-01 (02'-04') J008010 8/7/00	IMW-01 (06'-08') J008011 8/7/00
PCBs (mg/kg)	Arochlor-1242	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Arochlor-1248	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Arochlor-1254	0.33 ND	1.25	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Arochlor-1260	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Total PCBs	0.33 ND	1.25	0.33 ND	0.33 ND	0.33 ND	0.33 ND
Metals (mg/kg)	Arsenic	11	12.1	2.3	6.7	5.5	4.8
	Barium	124	180	17.1	67.3	43.8	65.9
	Cadmium	0.6	0.6	0.07	0.1	0.2	0.3
	Chromium	34.9	24.1	8	15.7	12.5	73.6
	Copper	113	70.2	8.1	20.1	16.5	19.2
	Lead	161	190	9.8	9.9	28.6	30.1
	Mercury	33.7	11.1	0.23	0.06	0.37	0.15
	Selenium	0.3 ND	2 ND	0.3 ND	0.2 ND	0.6	0.2 ND
	Sodium	1920	7040	2980	707	656	1920
	Zinc	114	192	22.9	44.5	54.7	81.7
Inorganics (mg/kg)	Cyanide, Total	0.124	0.361	0.899	0.2 ND	0.2	0.3
	Nitrogen, Ammonia	37	17 ND	87	16 ND	49	182
General Chemistry	Chloride (mg/kg)	1980	1450	1120	1620	1270	1240
	pH at 25 deg C	9.7	11.3	10.8	7.82	8.18	9.01
	Sulfate (mg/kg)	202(	4840	1540	2410	1500	1380

Table E-1
BASF Riverview, Michigan
Soil Samples
PCBs, Metals, Inorganics, General Chemistry
Printed: 1-30-01

URS

DATA SUMMARY
Shrader Lab Packages

	SAMPLE # / PARAMETER	IMW-05 (02'-04') J008022 8/8/00	IMW-05 (04'-06') J008021 8/8/00	IMW-06 (02'-04') J008017 8/8/00	IMW-06 (06'-08') J008018 8/8/00	IMW-060 (06'-08') J008019 8/8/00	SMW-04 (10'-12') J008006 8/4/00
PCBs (mg/kg)	Arochlor-1242	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Arochlor-1248	3.97	0.895	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Arochlor-1254	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Arochlor-1260	0.33 ND	0.33 ND	0.33 ND	1.35	0.33 ND	0.33 ND
	Total PCBs	3.97	0.895	0.33 ND	1.35	0.33 ND	0.33 ND
Metals (mg/kg)	Arsenic	13.4	24.7	97.8	32.5	19	1.8
	Barium	378	128	77.3	154	161	69
	Cadmium	12.9	1.8	0.2	14.9	6.1	0.6
	Chromium	3350	348	16	69.8	68.3	9
	Copper	5790	427	15.2	128	103	11.9
	Lead	791	234	18	145	177	18.4
	Mercury	22900	3440	2.61	4.46	3.6	1.59
	Selenium	82.1	6.2	0.8	0.5	1.1	0.2 ND
	Sodium	3770	3570	9060	14500	16700	2000
	Zinc	855	256	36.7	546	415	42.1
Inorganics (mg/kg)	Cyanide, Total	3.8	4.2	22.8	5.8	5.5	1
	Nitrogen, Ammonia	28	47	16 ND	22	39	37
General Chemistry	Chloride (mg/kg)	1530	1410	1330	1240	1310	1570
	pH at 25 deg C	8.2	10.78	12.43	11.64	11.73	9.69
	Sulfate (mg/kg)	6960	25000	28300	4440	4570	1240

Table E-1
BASF Riverview, Michigan
Soil Samples
PCBs, Metals, Inorganics, General Chemistry
Printed: 1-30-01

URS

DATA SUMMARY
Shrader Lab Packages

	SAMPLE # / PARAMETER	SMW-14 (06'-08') J008009 8/7/00	SMW-15 (04'-06') J008008 8/7/00	SMW-16 (0'-02') J021001 8/9/00	SMW-17 (0'-02') J021002 8/9/00	SMW-18 (0'-02') J021003 8/9/00	SMW-19 (0'-02') J021004 8/9/00
PCBs (mg/kg)	Arochlor-1242	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Arochlor-1248	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Arochlor-1254	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Arochlor-1260	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Total PCBs	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
Metals (mg/kg)	Arsenic	1.9	6.3	3.8 ND	6	8.8	8.5
	Barium	78.4	69.4	89.5	109	70.6	411
	Cadmium	0.2	0.2	0.5 ND	0.8	0.4	0.6
	Chromium	11.5	15.4	944	295	85.2	178
	Copper	8.8	20.5	22.8	55.3	21.4	63.2
	Lead	6.9	8.7	17	91.3	68.2	126
	Mercury	0.14	0.05 ND	0.05 ND	0.25	0.14	0.77
	Selenium	0.5	0.2 ND	3.8 ND	1 ND	1 ND	1 ND
	Sodium	4530	3540	1840	1110	757	770
	Zinc	19.5	54	63.8	276	105	207
Inorganics (mg/kg)	Cyanide, Total	1.1	2.7	0.3	0.5	0.3	0.7
	Nitrogen, Ammonia	161	24	16 ND	60	35	30
General Chemistry	Chloride (mg/kg)	1400	1490	--------	--------	--------	--------
	pH at 25 deg C	10.57	9.69	12.54	8.78	8.15	10.91
	Sulfate (mg/kg)	2560	1990	2400	4150	3020	4180

Table E-1
BASF Riverview, Michigan
Soil Samples
PCBs, Metals, Inorganics, General Chemistry
Printed: 1-30-01

URS

DATA SUMMARY
Shrader Lab Packages

	SAMPLE # / PARAMETER	SMW-20 (04'-06') J008016 8/7/00	SMW-21 (02'-04') J008012 8/7/00	SMW-22 (04'-06') J008013 8/7/00	SMW-23 (04'-06') J008020 8/8/00	TP-1 COMP J069007 8/31/00	TP-2 COMP J069002 8/30/00
PCBs (mg/kg)	Arochlor-1242	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Arochlor-1248	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Arochlor-1254	0.33 ND	0.33 ND	0.33 ND	0.33 ND	7.15	2.36
	Arochlor-1260	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Total PCBs	0.33 ND	0.33 ND	0.33 ND	0.33 ND	7.15	2.36
Metals (mg/kg)	Arsenic	5.2	10.4	6.3	8	14.4	27.5
	Barium	96.5	146	86.9	99.8	375	88.9
	Cadmium	0.4	1.1	0.3	0.3	2.6	1
	Chromium	19.1	24	27	26.7	51.7	49.5
	Copper	27.6	68.5	52.5	28.1	268	90.4
	Lead	75.8	156	265	52.3	564	193
	Mercury	4.9	7.29	20.2	6.66	2.95	0.84
	Selenium	0.6	0.8	0.3	0.2 ND	1 ND	1 ND
	Sodium	2440	1990	3200	1200	4120	15400
	Zinc	62.7	254	63.7	80.5	508	257
Inorganics (mg/kg)	Cyanide, Total	0.2	0.9	4.1	0.5	1.9	0.6
	Nitrogen, Ammonia	35	74	16 ND	102	32	135
General Chemistry	Chloride (mg/kg)	1310	1320	1510	1380	--------	--------
	pH at 25 deg C	8.66	7.39	9.43	8.61	8.71	10.23
	Sulfate (mg/kg)	2110	8590	2060	1720	1690	1900

Table E-1
BASF Riverview, Michigan
Soil Samples
PCBs, Metals, Inorganics, General Chemistry
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

	SAMPLE # / PARAMETER	TP-3 COMP J069005 8/31/00	TP-30 COMP J069006 8/31/00	TP-4 COMP J069004 8/31/00	TP-5 COMP J069001 8/30/00	TP-6 COMP J069003 8/31/00
PCBs (mg/kg)	Arochlor-1242	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Arochlor-1248	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Arochlor-1254	0.364	0.362	1.13	2.76	0.363
	Arochlor-1260	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Total PCBs	0.364	0.362	1.13	2.76	0.363
Metals (mg/kg)	Arsenic	8.6	4	9.2	13.4	12
	Barium	111	93.6	124	139	135
	Cadmium	0.7	0.7	0.7	0.5	0.4
	Chromium	17.4	17.5	31.4	21.6	43.5
	Copper	53.8	40.2	94	37.6	45.8
	Lead	195	155	387	125	177
	Mercury	6.63	18.1	175	10.4	46
	Selenium	0.2	0.2	1.3 ND	1 ND	1 ND
	Sodium	12500	12800	37400	7110	12400
	Zinc	112	76.5	131	97.4	144
Inorganics (mg/kg)	Cyanide, Total	4.5	3	2	4.9	0.9
	Nitrogen, Ammonia	83	135	71	67	66
General Chemistry	Chloride (mg/kg)	--------	--------	--------	--------	--------
	pH at 25 deg C	9.32	9.35	10.23	9.65	11.15
	Sulfate (mg/kg)	1410	1600	2290	2170	2630

Table E-2
BASF Riverview, Michigan
River Fill Samples
Semivolatile Organics
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

SAMPLE # / PARAMETE	SB-01 (13.5'-19.5') I989001 7/26/00 mg/kg	SB-02 (24.5'-25') I989002 7/26/00 mg/kg	SB-09 (3.5'-8.5') I989003 7/26/00 mg/kg	SB-10 (16'-16.5') I989004 7/26/00 mg/kg
1,2,4,5-Tetrachlorobenzene	0.1 ND	0.1 ND	0.1 ND	0.2 ND
1,2,4-Trichlorobenzene	0.1 ND	0.1 ND	0.1 ND	0.2 ND
2,4,6-Trichlorophenol	0.1 ND	0.1 ND	0.1 ND	0.2 ND
2,4-Dichlorophenol	0.1 ND	0.1 ND	0.1 ND	0.2 ND
2,4-Dimethylphenol	0.1 ND	0.1 ND	0.1 ND	0.2 ND
2-Chlorophenol	0.1 ND	0.1 ND	0.1 ND	0.2 ND
Acenaphthene	0.1 ND	0.1 ND	0.141	0.2 ND
Aniline	0.3 ND	0.3 ND	0.3 ND	0.3 ND
Benzo(a)pyrene	0.2 ND	0.334	0.552	0.37
bis(2-Ethylhexyl)phthalate	1.21	0.778	1.85	0.677
Carbazole	0.1 ND	0.212	0.614	0.2 ND
Di-n-butyl phthalate	0.1 ND	0.1 ND	0.1 ND	0.2 ND
Dibenzofuran	0.1 ND	0.192	0.685	0.2 ND
Fluoranthene	0.895	1.31	3.25	0.826
Fluorene	0.19	0.228	0.984	0.2 ND
Hexachlorobutadiene	0.1 ND	0.1 ND	0.1 ND	0.2 ND
Hexachloroethane	0.2 ND	0.2 ND	0.1 ND	0.2 ND
Isophorone	0.1 ND	0.1 ND	0.1 ND	0.2 ND
m,p-Cresol	0.1 ND	0.1 ND	0.1 ND	1.31
Naphthalene	0.544	0.785	2.15	0.233
o-Cresol	0.1 ND	0.1 ND	0.1 ND	0.2 ND
Pentachlorophenol	0.3 ND	0.3 ND	0.3 ND	0.3 ND
Phenanthrene	0.955	1.46	4.08	0.76
Phenol	0.1 ND	0.1 ND	0.1 ND	0.497

Table E-2
BASF Riverview, Michigan
River Fill Samples
PCBs, Metals, Inorganics, General Chemistry
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

	SAMPLE # / PARAMETER	SB-01 (13.5'-19.5') I989001 7/26/00	SB-02 (24.5'-25') I989002 7/26/00	SB-09 (3.5'-8.5') I989003 7/26/00	SB-10 (16'-16.5') I989004 7/26/00
PCBs (mg/kg)	Arochlor-1242	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Arochlor-1248	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Arochlor-1254	1.51	0.952	1.25	0.918
	Arochlor-1260	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Total PCBs	1.51	0.952	1.25	0.918
Metals (mg/kg)	Arsenic	9.2	15.3	9.7	8.6
	Barium	158	119	125	134
	Cadmium	1.1	1.4	0.8	1.9
	Chromium	33.6	35.5	47.2	69.1
	Copper	27.4	47.8	72.9	53.8
	Lead	129	38.8	181	335
	Mercury	4.78	2.21	1.91	2.07
	Selenium	0.3 ND	0.3 ND	0.4 ND	0.9
	Sodium	1650	3320	2940	6270
	Zinc	472	141	107	138
Inorganics (mg/kg)	Cyanide, Total	0.34	1.24	1.27	7.39
	Nitrogen, Ammonia	27	-------	17 ND	77
General Chemistry	Chloride (mg/kg)	1640	-------	1700	8280
	pH at 25 deg C	11.3	9.28	12.4	12.4
	Sulfate (mg/kg)	2340	-------	2920	10700

Table E-3
BASF Riverview, Michigan
Concrete Samples
PCBs, Mercury
Printed: 1-30-01

URS

DATA SUMMARY
Shrader Lab Packages

	SAMPLE # / PARAMETER	RR-1 BOTTOM J035003 8/14/00 (mg/kg)	RR-1 MIDDLE J035002 8/14/00 (mg/kg)	RR-1 TOP J035001 8/14/00 (mg/kg)	RR-2 BOTTOM J035006 8/14/00 (mg/kg)	RR-2 MIDDLE J035005 8/14/00 (mg/kg)	RR-2 TOP J035004 8/14/00 (mg/kg)
PCBs	Arochlor-1242	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Arochlor-1248	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Arochlor-1254	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Arochlor-1260	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Total PCBs	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
Metals	Mercury	0.05 ND	0.05 ND	0.05 ND	0.05 ND	0.05 ND	0.05 ND

	SAMPLE # / PARAMETER	RR-3 BOTTOM J035009 8/14/00 (mg/kg)	RR-3 MIDDLE J035008 8/14/00 (mg/kg)	RR-3 TOP J035007 8/14/00 (mg/kg)	RR-4 BOTTOM J035012 8/14/00 (mg/kg)	RR-4 MIDDLE J035011 8/14/00 (mg/kg)	RR-4 TOP J035010 8/14/00 (mg/kg)
PCBs	Arochlor-1242	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Arochlor-1248	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Arochlor-1254	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Arochlor-1260	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
	Total PCBs	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND	0.33 ND
Metals	Mercury	0.21	0.05 ND	0.05 ND	0.2	0.05 ND	0.16

	SAMPLE # / PARAMETER	RR-5 BOTTOM J035015 8/14/00 (mg/kg)	RR-5 MIDDLE J035014 8/14/00 (mg/kg)	RR-5 TOP J035013 8/14/00 (mg/kg)
PCBs	Arochlor-1242	0.33 ND	0.33 ND	0.33 ND
	Arochlor-1248	0.33 ND	0.33 ND	0.33 ND
	Arochlor-1254	0.33 ND	0.33 ND	0.33 ND
	Arochlor-1260	0.33 ND	0.33 ND	0.33 ND
	Total PCBs	0.33 ND	0.33 ND	0.33 ND
Metals	Mercury	0.3	0.1	0.05 ND

Table E-4
BASF Riverview, Michigan
Groundwater Samples
Volatile Organics
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

SAMPLE # / PARAMETER	BMW-1 J062003 8/25/00 ug/L	DMW-01 J030009 8/11/00 ug/L	DMW-02 J011016 8/9/00 ug/L	DMW-03 J030019 8/15/00 ug/L	DMW-04 J030014 8/14/00 ug/L	DMW-05 J011019 8/9/00 ug/L	DMW-06 J011018 8/9/00 ug/L	DMW-09 J062005 8/28/00 ug/L
1,2-Dichlorobenzene	2 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND
1,2-Dichloroethane	4 ND	1 ND	1 ND	1 ND	1 ND	1 ND	19	1 ND
1,2-Dichloropropane	3 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND
1,4-Dichlorobenzene	2 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND
Acetone	90 ND	5 ND	7 ND	7 ND	7 ND	10 ND	7 ND	10 ND
Benzene	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1.7	1 ND
Chlorobenzene	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND
Ethylbenzene	2 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND
m,p-Xylene	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1.7	1 ND
Methyl ethyl ketone	30 ND	3 ND	6 ND	3 ND	4 ND	5 ND	5 ND	6 ND
Methylene chloride	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND
o-Xylene	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND
Styrene	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND
Tetrachloroethene	3 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND
Toluene	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	2.8	1 ND
Trichloroethene	3 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND
Vinyl chloride	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	24	2 ND

Table E-4
BASF Riverview, Michigan
Groundwater Samples
Volatile Organics
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

SAMPLE # / PARAMETER	DMW-090 J062006 8/28/00 ug/L	DMW-10 J053019 8/23/00 ug/L	DMW-11 J062001 8/24/00 ug/L	DMW-12 J062008 8/29/00 ug/L	DMW-13 J062002 8/24/00 ug/l	IMW-01 J042011 8/18/00 ug/L	IMW-05 J042001 8/16/00 ug/L	IMW-06 J042008 8/17/00 ug/L
1,2-Dichlorobenzene	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	3 ND	3 ND
1,2-Dichloroethane	1 ND	1 ND	1 ND	1 ND	2 ND	22	3 ND	47
1,2-Dichloropropane	1 ND	1 ND	1 ND	1 ND	1 ND	8.4	16	20
1,4-Dichlorobenzene	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	2 ND	2 ND
Acetone	10 ND	10 ND	20 ND	20 ND	30 ND	10 ND	12000	1800
Benzene	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	17	7.7
Chlorobenzene	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND
Ethylbenzene	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	2 ND	2 ND
m,p-Xylene	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	4.4	1 ND
Methyl ethyl ketone	6 ND	5 ND	6 ND	7 ND	10 ND	3 ND	10 ND	160
Methylene chloride	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND	1400	100
o-Xylene	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	5.7	1 ND
Styrene	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND
Tetrachloroethene	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	3 ND	3 ND
Toluene	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	9.5	13
Trichloroethene	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	2 ND	2 ND
Vinyl chloride	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	16

Table E-4
BASF Riverview, Michigan
Groundwater Samples
Volatile Organics
Printed: 1-30-01

URS

DATA SUMMARY
Shrader Lab Packages

SAMPLE # / PARAMETER	IMW-09 J042010 8/18/00 ug/L	IMW-10 J042005 8/17/00 ug/L	IMW-11 J053002 8/22/00 ug/L	IMW-110 J053003 8/22/00 ug/L	IMW-12 J053001 8/22/00 ug/L	IMW-13 J053007 8/22/00 ug/L	MW-A J030013 8/11/00 ug/L	MW-B J030004 8/10/00 ug/L
1,2-Dichlorobenzene	3 ND	2	1 ND	2 ND	2 ND	2 ND	5.4	20 ND
1,2-Dichloroethane	3 ND	43	3 ND	3 ND	3 ND	7 ND	2 ND	30 ND
1,2-Dichloropropane	5.4	39	2 ND	2 ND	2 ND	22	13	20 ND
1,4-Dichlorobenzene	2 ND	2 ND	1 ND	1 ND	1 ND	1 ND	1 ND	10 ND
Acetone	1100	2300	930	1100	730	1500	760	12000
Benzene	97	40	5.3	4.4	14	150	120	5 ND
Chlorobenzene	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	17	7 ND
Ethylbenzene	2 ND	2 ND	3.9	4.5	1 ND	10	2	20 ND
m,p-Xylene	6.1	16	5.3	5.7	3.4	28	6.5	7 ND
Methyl ethyl ketone	20 ND	200	20 ND	20 ND	20 ND	20 ND	7 ND	100 ND
Methylene chloride	5 ND	400	90	89	87	72	28	6400
o-Xylene	5.2	9.3	4	4.5	3.2	21	6.6	9 ND
Styrene	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	7 ND
Tetrachloroethene	2 ND	4.8	2 ND	2 ND	2 ND	2 ND	1 ND	20 ND
Toluene	62	110	9.8	10	21	130	40	15
Trichloroethene	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	1 ND	20 ND
Vinyl chloride	5	70	27	27	2 ND	2 ND	2 ND	10 ND

Table E-4
BASF Riverview, Michigan
Groundwater Samples
Volatile Organics
Printed: 1-30-01

URS

DATA SUMMARY
Shrader Lab Packages

SAMPLE # / PARAMETER	MW-C J030005 8/10/00 ug/L	MW-D J011012 8/8/00 ug/L	MW-D0 J011013 8/8/00 ug/L	MW-E J011017 8/9/00 ug/L	MW-G J011007 8/7/00 ug/L	MW-H J030020 8/15/00 ug/L	MW-I J030021 8/15/00 ug/L	MW-J J042003 8/16/00 ug/L
1,2-Dichlorobenzene	1 ND	6.6	8.6	1 ND	1 ND	2 ND	2 ND	3 ND
1,2-Dichloroethane	2 ND	120	130	27	1 ND	3 ND	2 ND	3 ND
1,2-Dichloropropane	1 ND	12	13	2.3	1 ND	2 ND	1 ND	2 ND
1,4-Dichlorobenzene	1 ND	1 ND	1 ND	1 ND	1 ND	2 ND	1 ND	2 ND
Acetone	1600	2300	2500	370	20 ND	20 ND	6000	2600
Benzene	2.8	26	28	5.2	1 ND	1 ND	1 ND	3.9
Chlorobenzene	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND
Ethylbenzene	1 ND	4.1	5.4	1 ND	1 ND	1 ND	1 ND	2 ND
m,p-Xylene	1 ND	11	14	2	1 ND	1 ND	1 ND	1 ND
Methyl ethyl ketone	7 ND	90	89	7 ND	4 ND	10 ND	8 ND	10 ND
Methylene chloride	360	320	330	72	5 ND	62	5 ND	5 ND
o-Xylene	1 ND	7.2	8	1.1	1 ND	1 ND	1 ND	1 ND
Styrene	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND
Tetrachloroethene	1 ND	2.3	2.4	1.8	1 ND	2 ND	2 ND	3 ND
Toluene	1 ND	130	130	9.1	1 ND	1 ND	1 ND	4.9
Trichloroethene	1 ND	2 ND	2 ND	1	1 ND	2 ND	1 ND	2 ND
Vinyl chloride	2 ND	46	55	9.9	2 ND	2 ND	2 ND	2 ND

Table E-4
BASF Riverview, Michigan
Groundwater Samples
Volatile Organics
Printed: 1-30-01

URS

DATA SUMMARY
Shrader Lab Packages

SAMPLE # / PARAMETER	MW-K J030015 8/14/00 ug/L	PZ-1 J030006 8/10/00 ug/L	PZ-2 J030011 8/11/00 ug/L	PZ-3 J030012 8/11/00 ug/L	PZ-4 J030002 8/10/00 ug/L	PZ-5 J030003 8/10/00 ug/L	PZ-6 J030001 8/10/00 ug/L	SB-01 J011011 8/8/00 ug/L
1,2-Dichlorobenzene	10 ND	3 ND	3 ND	1 ND	20 ND	3 ND	4 ND	2 ND
1,2-Dichloroethane	20 ND	3 ND	3 ND	2 ND	30 ND	5 ND	5 ND	3 ND
1,2-Dichloropropane	9 ND	2 ND	2 ND	1 ND	20 ND	3 ND	22	2 ND
1,4-Dichlorobenzene	9 ND	2 ND	2 ND	1 ND	10 ND	2 ND	2 ND	1 ND
Acetone	100 ND	20 ND	590	170	400 ND	60 ND	1100	30 ND
Benzene	590	48	93	58	290	190	47	3.2
Chlorobenzene	4 ND	1 ND	1 ND	1 ND	16	1 ND	43	1 ND
Ethylbenzene	9 ND	2 ND	2 ND	1 ND	19	2 ND	3 ND	2 ND
m,p-Xylene	16	1 ND	9	1.9	41	5.8	4.8	1 ND
Methyl ethyl ketone	70 ND	200	10 ND	7 ND	200 ND	30 ND	310	30 ND
Methylene chloride	140	5 ND	66	44	610	91	300	5 ND
o-Xylene	13	1 ND	6	1.5	31	3.7	6.9	1 ND
Styrene	4 ND	1 ND	1 ND	1 ND	6 ND	1 ND	1 ND	1 ND
Tetrachloroethene	10 ND	2 ND	2 ND	1 ND	34	3 ND	3 ND	2 ND
Toluene	380	15	86	29	240	44	11	1 ND
Trichloroethene	10 ND	2 ND	2 ND	1 ND	20 ND	3 ND	3 ND	2 ND
Vinyl chloride	6 ND	5.3	2 ND	2 ND	9 ND	2 ND	2 ND	2 ND

Table E-4
BASF Riverview, Michigan
Groundwater Samples
Volatile Organics
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

SAMPLE # / PARAMETER	SB-02 J011009 8/8/00 ug/L	SB-03 J011015 8/9/00 ug/L	SMW-01 J030018 8/15/00 ug/L	SMW-02 J011010 8/8/00 ug/L	SMW-03 J030010 8/14/00 ug/L	SMW-04 J053017 8/23/00 ug/L	SMW-04-99 J011003 8/4/00 ug/L	SMW-040 J053016 8/23/00 ug/L
1,2-Dichlorobenzene	1 ND	2 ND	3 ND	2 ND	1 ND	20 ND	1 ND	30 ND
1,2-Dichloroethane	1 ND	4 ND	3 ND	3 ND	1 ND	30 ND	1 ND	40 ND
1,2-Dichloropropane	1 ND	2 ND	5.4	2 ND	1 ND	20 ND	1 ND	20 ND
1,4-Dichlorobenzene	1 ND	1 ND	2 ND	1 ND	1 ND	10 ND	1 ND	10 ND
Acetone	7 ND	450	350	20 ND	6 ND	2000	20 ND	600 ND
Benzene	1 ND	1 ND	1 ND	1 ND	1 ND	140	1 ND	120
Chlorobenzene	1 ND	1 ND	1 ND	1 ND	1 ND	19	1 ND	10 ND
Ethylbenzene	1 ND	2 ND	2 ND	1 ND	1 ND	10 ND	1 ND	20 ND
m,p-Xylene	1 ND	1 ND	1 ND	1 ND	1 ND	7 ND	1 ND	20 ND
Methyl ethyl ketone	4 ND	20 ND	10 ND	10 ND	3 ND	100 ND	10 ND	300 ND
Methylene chloride	5 ND	5 ND	69	5 ND	5 ND	11000	5 ND	9600
o-Xylene	1 ND	1 ND	1 ND	1 ND	1 ND	8 ND	1 ND	8 ND
Styrene	1 ND	1 ND	1 ND	1 ND	1 ND	7 ND	1 ND	7 ND
Tetrachloroethene	1 ND	2 ND	2 ND	2 ND	1 ND	110	1 ND	20 ND
Toluene	1 ND	1 ND	1 ND	1 ND	1 ND	62	1 ND	10 ND
Trichloroethene	1 ND	2 ND	2 ND	2 ND	1 ND	220	1 ND	180
Vinyl chloride	2 ND	2 ND	2 ND	2 ND	2 ND	10 ND	2 ND	10 ND

Table E-4
BASF Riverview, Michigan
Groundwater Samples
Volatile Organics
Printed: 1-30-01

URS

DATA SUMMARY
Shrader Lab Packages

SAMPLE # / PARAMETER	SMW-05 J042002 8/16/00 ug/L	SMW-05-99 J011004 8/7/00 ug/L	SMW-06 J042007 8/17/00 ug/L	SMW-06-99 J011005 8/7/00 ug/L	SMW-07 J011002 8/4/00 ug/L	SMW-08 J011001 8/4/00 ug/L	SMW-09 J042009 8/18/00 ug/L	SMW-10 J042006 8/17/00 ug/L
1,2-Dichlorobenzene	3 ND	1 ND	3 ND	2 ND	1 ND	1 ND	4 ND	28
1,2-Dichloroethane	4 ND	1 ND	25	3 ND	1 ND	1 ND	5 ND	35
1,2-Dichloropropane	21	1 ND	14	2 ND	1 ND	1 ND	10	34
1,4-Dichlorobenzene	2 ND	1 ND	2 ND	1 ND	1 ND	1 ND	2 ND	2 ND
Acetone	11000	20 ND	2200	20 ND	20 ND	87	660	2300
Benzene	18	1 ND	3.8	1 ND	1 ND	1.2	140	53
Chlorobenzene	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND
Ethylbenzene	2 ND	1 ND	2 ND	2 ND	1 ND	1 ND	2 ND	2 ND
m,p-Xylene	7.5	1 ND	1 ND	1 ND	1 ND	1 ND	5.9	21
Methyl ethyl ketone	10 ND	6 ND	140	10 ND	10 ND	9 ND	20 ND	190
Methylene chloride	990	5 ND	62	5 ND	5 ND	5 ND	5 ND	350
o-Xylene	7.9	1 ND	1 ND	1 ND	1 ND	1 ND	8	11
Styrene	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	1 ND	5.8
Tetrachloroethene	3 ND	1 ND	3 ND	2 ND	1 ND	1 ND	3 ND	6.5
Toluene	13	1 ND	3.2	1 ND	1 ND	1 ND	56	110
Trichloroethene	2 ND	1 ND	2 ND	2 ND	1 ND	1 ND	6.7	2 ND
Vinyl chloride	2 ND	2 ND	5.2	2 ND	2 ND	2 ND	2.8	66

Table E-4
BASF Riverview, Michigan
Groundwater Samples
Volatile Organics
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

SAMPLE # / PARAMETER	SMW-11 J053004 8/22/00 ug/L	SMW-12 J042021 8/21/00 ug/L	SMW-13 J053018 8/23/00 ug/L	SMW-14 J042019 8/21/00 ug/L	SMW-15 J042020 8/21/00 ug/L	SMW-16 J053009 8/22/00 ug/L	SMW-17 J053008 8/22/00 ug/L	SMW-18 J042013 8/21/00 ug/L
1,2-Dichlorobenzene	2 ND	2 ND	20 ND	1 ND	1 ND	1 ND	1 ND	1 ND
1,2-Dichloroethane	3 ND	3 ND	40 ND	6	1 ND	1 ND	1 ND	1 ND
1,2-Dichloropropane	2 ND	2 ND	20 ND	16	1 ND	1 ND	1 ND	1 ND
1,4-Dichlorobenzene	1 ND	1 ND	10 ND	1 ND	1 ND	1 ND	1 ND	1 ND
Acetone	890	940	300 ND	160	9 ND	10 ND	9 ND	5 ND
Benzene	2.8	1 ND	7 ND	17	1 ND	1 ND	1.3	1 ND
Chlorobenzene	1 ND	1 ND	8 ND	1 ND	1 ND	1 ND	1 ND	1 ND
Ethylbenzene	1 ND	2 ND	20 ND	1 ND	1 ND	1 ND	1.1	1 ND
m,p-Xylene	1 ND	1 ND	9 ND	2.4	1 ND	1 ND	2.5	1 ND
Methyl ethyl ketone	10 ND	50 ND	100 ND	4 ND	5 ND	7 ND	3 ND	3 ND
Methylene chloride	45	52	20 ND	14	5 ND	5 ND	11	5 ND
o-Xylene	1 ND	1 ND	10 ND	1.2	1 ND	1 ND	1.5	1 ND
Styrene	1 ND	1 ND	8 ND	1 ND	1 ND	1 ND	1 ND	1 ND
Tetrachloroethene	2 ND	2 ND	20 ND	1 ND	1 ND	1 ND	1 ND	1 ND
Toluene	3.3	1 ND	18	5.3	1 ND	1 ND	1.2	1 ND
Trichloroethene	2 ND	2 ND	20 ND	1 ND	1 ND	1 ND	1 ND	1 ND
Vinyl chloride	2 ND	2 ND	10 ND	2 ND	2 ND	2 ND	2 ND	2 ND

Table E-4
BASF Riverview, Michigan
Groundwater Samples
Volatile Organics
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

PARAMETER / SAMPLE #	SMW-19 J042014 8/21/00 ug/L	SMW-190 J042015 8/21/00 ug/L	SMW-20 J042016 8/21/00 ug/L	SMW-21 J042017 8/21/00 ug/L	SMW-22 J042018 8/21/00 ug/L	SMW-23 J053005 8/22/00 ug/L	SMW-230 J053006 8/22/00 ug/L	SMW-24 J053014 8/23/00 ug/L
1,2-Dichlorobenzene	1 ND	1 ND	30 ND	1 ND	3 ND	1 ND	1 ND	1.7
1,2-Dichloroethane	1 ND	1 ND	320	1 ND	4 ND	1 ND	1 ND	13
1,2-Dichloropropane	1 ND	1 ND	20 ND	1 ND	5.5	1 ND	1 ND	2.2
1,4-Dichlorobenzene	1 ND	1 ND	20 ND	1 ND	2 ND	1 ND	1 ND	4.2
Acetone	5 ND	8 ND	200 ND	6 ND	4000	10 ND	20 ND	20 ND
Benzene	1 ND	1 ND	2500	1 ND	3.3	1 ND	1 ND	23
Chlorobenzene	1 ND	1 ND	430	1 ND	1 ND	1 ND	1 ND	1 ND
Ethylbenzene	1 ND	1 ND	190	1 ND	2 ND	1 ND	1 ND	2
m,p-Xylene	1 ND	1 ND	500	1 ND	1 ND	1 ND	1 ND	2
Methyl ethyl ketone	3 ND	4 ND	100 ND	3 ND	20 ND	7 ND	6 ND	10 ND
Methylene chloride	5 ND	5 ND	1800	5 ND	5 ND	32	29	5 ND
o-Xylene	1 ND	1 ND	300	1 ND	1 ND	1 ND	1 ND	1.8
Styrene	1 ND	1 ND	250	1 ND	1 ND	1 ND	1 ND	1 ND
Tetrachloroethene	1 ND	1 ND	20 ND	1 ND	2 ND	1 ND	1 ND	1 ND
Toluene	1 ND	1 ND	1500	1 ND	4.7	1 ND	1 ND	4.1
Trichloroethene	1 ND	1 ND	20 ND	1 ND	2 ND	1 ND	1 ND	1 ND
Vinyl chloride	2 ND	2 ND	10 ND	2 ND	2 ND	2 ND	2 ND	2 ND

Table E-4
BASF Riverview, Michigan
Groundwater Samples
Volatile Organics
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

PARAMETER / SAMPLE #	SMW-25 J053015 8/23/00 ug/L	SMW-26 J053011 8/23/00 ug/L	SMW-260 J053012 8/23/00 ug/L	SMW-27 J053013 8/23/00 ug/L
1,2-Dichlorobenzene	1 ND	1 ND	1 ND	5.1
1,2-Dichloroethane	2 ND	27	36	55
1,2-Dichloropropane	1 ND	17	22	11
1,4-Dichlorobenzene	1 ND	1 ND	1 ND	1 ND
Acetone	20 ND	220	2000 ND	1300
Benzene	34	20	27	38
Chlorobenzene	1 ND	1 ND	1 ND	1 ND
Ethylbenzene	6.1	7.4	33	3 ND
m,p-Xylene	11	17	32	13
Methyl ethyl ketone	9 ND	4 ND	20 ND	20 ND
Methylene chloride	5 ND	130	140	460
o-Xylene	7.8	11	27	18
Styrene	1 ND	2.1	1 ND	1 ND
Tetrachloroethene	1 ND	1.8	1 ND	2 ND
Toluene	8.1	31	46	58
Trichloroethene	1 ND	1 ND	1 ND	65
Vinyl chloride	3.8	6.1	9.6	17

Table E-4
BASF Riverview, Michigan
Groundwater Samples
Semivolatile Organics
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

SAMPLE # / PARAMETER	BMW-1 J062003 8/25/00 ug/L	DMW-01 J030009 8/11/00 ug/L	DMW-02 J011016 8/9/00 ug/L	DMW-03 J030019 8/15/00 ug/L	DMW-04 J030014 8/14/00 ug/L	DMW-05 J011019 8/9/00 ug/L	DMW-06 J011018 8/9/00 ug/L	DMW-09 J062005 8/28/00 ug/L
1,2,4,5-Tetrachlorobenzene	2 ND	2 ND	4 ND	4 ND	2 ND	4 ND	4 ND	2 ND
1,2,4-Trichlorobenzene	2 ND	2 ND	4 ND	4 ND	2 ND	4 ND	4 ND	2 ND
2,4,6-Trichlorophenol	2 ND	2 ND	4 ND	4 ND	2 ND	4 ND	4 ND	2 ND
2,4-Dichlorophenol	2 ND	2 ND	4 ND	4 ND	2 ND	4 ND	4 ND	2 ND
2,4-Dimethylphenol	2 ND	2 ND	4 ND	4 ND	2 ND	4 ND	4 ND	2 ND
2-Chlorophenol	2 ND	2 ND	4 ND	4 ND	2 ND	4 ND	4 ND	2 ND
Acenaphthene	2 ND	2 ND	4 ND	4 ND	2 ND	4 ND	4 ND	2 ND
Aniline	2 ND	2 ND	4 ND	4 ND	2 ND	4 ND	4 ND	2 ND
Benzo(a)pyrene	2 ND	2 ND	4 ND	4 ND	2 ND	4 ND	4 ND	2 ND
bis(2-Ethylhexyl)phthalate	2 ND	2 ND	4 ND	246	10.7	868	204	2 ND
Carbazole	2 ND	2 ND	4 ND	4 ND	2 ND	4 ND	10.8	2 ND
Di-n-butyl phthalate	2 ND	2 ND	4 ND	4 ND	2 ND	4 ND	4 ND	2 ND
Dibenzofuran	2 ND	2 ND	4 ND	4 ND	2 ND	4 ND	5.77	2 ND
Fluoranthene	2 ND	2 ND	4 ND	4 ND	2 ND	4 ND	4 ND	2 ND
Fluorene	2 ND	2 ND	4 ND	4 ND	2 ND	4 ND	5.51	2 ND
Hexachlorobutadiene	2 ND	2 ND	4 ND	4 ND	2 ND	4 ND	4 ND	2 ND
Hexachloroethane	2 ND	2 ND	4 ND	5 ND	2 ND	4 ND	4 ND	2 ND
Isophorone	2 ND	2 ND	4 ND	4 ND	2 ND	4 ND	4 ND	2 ND
m,p-Cresol	6 ND	6 ND	10 ND	10 ND	6 ND	10 ND	10 ND	6 ND
Naphthalene	2 ND	2 ND	4 ND	4 ND	2 ND	4 ND	279	2 ND
o-Cresol	2 ND	2 ND	4 ND	4 ND	2 ND	4 ND	4 ND	2 ND
Pentachlorophenol	4 ND	4 ND	8 ND	8 ND	4 ND	8 ND	8 ND	4 ND
Phenanthrene	2 ND	2 ND	4 ND	4 ND	2 ND	4 ND	5.62	2 ND
Phenol	2 ND	2 ND	4 ND	4 ND	2 ND	4 ND	9.82	2 ND

Table E-4
BASF Riverview, Michigan
Groundwater Samples
Semivolatile Organics
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

SAMPLE # / PARAMETER	DMW-090 J062006 8/28/00 ug/L	DMW-10 J053019 8/23/00 ug/L	DMW-11 J062001 8/24/00 ug/L	DMW-12 J062008 8/29/00 ug/L	DMW-13 J062002 8/24/00 ug/L	IMW-01 J042011 8/18/00 ug/L	IMW-010 J042005 8/17/00 ug/L	IMW-05 J042001 8/16/00 ug/L
1,2,4,5-Tetrachlorobenzene	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	4 ND	7 ND
1,2,4-Trichlorobenzene	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	4 ND	4 ND
2,4,6-Trichlorophenol	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	8.31	55.3
2,4-Dichlorophenol	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	6.84	50.8
2,4-Dimethylphenol	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	228	4 ND
2-Chlorophenol	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	4 ND	25.4
Acenaphthene	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	12.8	4 ND
Aniline	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	4 ND	4 ND
Benzo(a)pyrene	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	18.9	38.8
bis(2-Ethylhexyl)phthalate	2 ND	2 ND	3.98	2 ND	2 ND	42	527	159
Carbazole	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	76.7	43.1
Di-n-butyl phthalate	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	4 ND	4 ND
Dibenzofuran	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	56.4	27.8
Fluoranthene	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	84.3	88.4
Fluorene	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	51.5	40.6
Hexachlorobutadiene	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	4 ND	6 ND
Hexachloroethane	2 ND	2 ND	2 ND	2 ND	2 ND	3 ND	4 ND	9 ND
Isophorone	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	4.5	4 ND
m,p-Cresol	6 ND	6 ND	6 ND	6 ND	6 ND	6 ND	895	416
Naphthalene	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	525	142
o-Cresol	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	259	59.1
Pentachlorophenol	4 ND	4 ND	4 ND	4 ND	4 ND	4 ND	50.8	226
Phenanthrene	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	186	125
Phenol	2 ND	2 ND	2 ND	2 ND	2 ND	2 ND	980	467

Table E-4.
BASF Riverview, Michigan
Groundwater Samples
Semivolatile Organics
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

PARAMETER / SAMPLE #	IMW-06 J042008 8/17/00 ug/L	IMW-09 J042010 8/18/00 ug/L	IMW-11 J053002 8/22/00 ug/L	IMW-110 J053003 8/22/00 ug/L	IMW-12 J053001 8/22/00 ug/L	IMW-13 J053007 8/22/00 ug/L	MW-A J030013 8/11/00 ug/L	MW-B J030004 8/10/00 ug/L
1,2,4,5-Tetrachlorobenzene	4 ND	2 ND	4 ND	4 ND	2 ND	4 ND	2 ND	10 ND
1,2,4-Trichlorobenzene	4 ND	2 ND	4 ND	4 ND	2 ND	4 ND	2 ND	7 ND
2,4,6-Trichlorophenol	6 ND	26.4	4 ND	4 ND	3.31	13.7	2 ND	63.2
2,4-Dichlorophenol	4 ND	2 ND	4 ND	4 ND	2 ND	34.1	2 ND	44.8
2,4-Dimethylphenol	800	2 ND	123	173	2 ND	16.8	2 ND	82
2-Chlorophenol	4 ND	2 ND	4 ND	4 ND	2 ND	12.6	2 ND	21.4
Acenaphthene	20.3	2 ND	4 ND	4 ND	2 ND	6.38	2 ND	23.8
Aniline	4 ND	2 ND	4 ND	4 ND	2 ND	4 ND	2.31	5 ND
Benzo(a)pyrene	40.6	2 ND	5.87	7.42	2 ND	17.1	2 ND	94.6
bis(2-Ethylhexyl)phthalate	267	2 ND	4 ND	4 ND	94.5	498	30.8	159
Carbazole	173	2 ND	4 ND	4 ND	2 ND	25.3	2 ND	102
Di-n-butyl phthalate	4 ND	2 ND	4 ND	4 ND	2 ND	4 ND	2 ND	4 ND
Dibenzofuran	90	2 ND	4 ND	4 ND	2 ND	26.5	2 ND	67.4
Fluoranthene	235	2 ND	9.7	10.9	2.4	68.7	2 ND	230
Fluorene	137	2 ND	4 ND	4 ND	2 ND	34.9	2 ND	101
Hexachlorobutadiene	6 ND	2 ND	4 ND	4 ND	2 ND	4 ND	2 ND	10 ND
Hexachloroethane	7 ND	2 ND	4 ND	4 ND	2 ND	4 ND	3 ND	20 ND
Isophorone	4 ND	2 ND	13	18.8	2 ND	4 ND	2 ND	6 ND
m,p-Cresol	2330	12	326	315	31.3	419	36	609
Naphthalene	802	14.3	4.71	5.41	3.69	248	17.3	451
o-Cresol	681	2 ND	81.8	75.2	3.84	45.7	14	121
Pentachlorophenol	267	4 ND	41.8	42.8	10.2	38.8	23.2	259
Phenanthrene	430	2 ND	8.8	9.92	6.03	126	2 ND	352
Phenol	2500	20.2	216	230	179	611	30.5	437

Table E-4
BASF Riverview, Michigan
Groundwater Samples
Semivolatile Organics
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

SAMPLE # / PARAMETER	MW-C J030005 8/10/00 ug/L	MW-D J011012 8/8/00 ug/L	MW-D0 J011013 8/8/00 ug/L	MW-E J011017 8/9/00 ug/L	MW-G J011007 8/7/00 ug/L	MW-H J030020 8/15/00 ug/L	MW-I J030021 8/15/00 ug/L	MW-J J042003 8/16/00 ug/L
1,2,4,5-Tetrachlorobenzene	2 ND	4 ND	4 ND	4 ND	2 ND	2 ND	2 ND	4 ND
1,2,4-Trichlorobenzene	2 ND	4 ND	4 ND	4 ND	2 ND	2 ND	2 ND	4 ND
2,4,6-Trichlorophenol	5.45	4 ND	4 ND	4 ND	2 ND	2 ND	8.21	4 ND
2,4-Dichlorophenol	2 ND	4 ND	4 ND	4 ND	2 ND	2 ND	2.13	4.69
2,4-Dimethylphenol	20.5	184	243	35.9	2 ND	2 ND	2 ND	11.2
2-Chlorophenol	2.58	4 ND	4 ND	4 ND	2 ND	2 ND	2 ND	4 ND
Acenaphthene	2 ND	4 ND	4 ND	4 ND	2 ND	2 ND	2 ND	4 ND
Aniline	2 ND	35.9	33.4	7.02	2 ND	2 ND	2 ND	4 ND
Benzo(a)pyrene	2 ND	5.17	8.18	4 ND	2 ND	2 ND	2 ND	4 ND
bis(2-Ethylhexyl)phthalate	2 ND	189	164	4.74	2 ND	2 ND	124	54
Carbazole	2.99	27.7	31.1	5.04	2 ND	2 ND	2 ND	5.43
Di-n-butyl phthalate	2 ND	4 ND	4 ND	4 ND	2 ND	2 ND	2 ND	4 ND
Dibenzofuran	2 ND	14.5	22.7	4 ND	2 ND	2 ND	2 ND	4 ND
Fluoranthene	2 ND	39.1	59.3	8.67	2 ND	2 ND	7	4.96
Fluorene	2 ND	15.8	22	4 ND	2 ND	2 ND	2.09	4.27
Hexachlorobutadiene	2 ND	4 ND	4 ND	4 ND	2 ND	3 ND	2 ND	4 ND
Hexachloroethane	2 ND	4 ND	4 ND	4 ND	2 ND	4 ND	2 ND	4 ND
Isophorone	2 ND	4 ND	4 ND	4 ND	2 ND	2 ND	2	4 ND
m,p-Cresol	55.4	777	854	158	6 ND	6 ND	6 ND	584
Naphthalene	16.5	194	223	25	2 ND	2 ND	2 ND	89
o-Cresol	17.4	233	267	49.2	2 ND	2 ND	2 ND	35.1
Pentachlorophenol	24.1	147	129	35.1	4 ND	4 ND	7.75	8 ND
Phenanthrene	3.35	60.3	93.1	11.8	2 ND	2 ND	5.67	13.2
Phenol	25.5	731	770	147	2 ND	2 ND	2 ND	69.4

Table E-4
BASF Riverview, Michigan
Groundwater Samples
Semivolatile Organics
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

SAMPLE # / PARAMETER	MW-K J030015 8/14/00 ug/L	PZ-1 J030006 8/10/00 ug/L	PZ-2 J030011 8/11/00 ug/L	PZ-3 J030012 8/11/00 ug/L	PZ-4 J030002 8/10/00 ug/L	PZ-5 J030008 8/11/00 ug/L	PZ-6 J030001 8/10/00 ug/L	SB-01 J011011 8/8/00 ug/L
1,2,4,5-Tetrachlorobenzene	4 ND	4 ND	4 ND	2 ND	10 ND	4 ND	4 ND	4 ND
1,2,4-Trichlorobenzene	4 ND	4 ND	4 ND	2 ND	7 ND	4 ND	4 ND	4 ND
2,4,6-Trichlorophenol	7.36	4 ND	4 ND	2 ND	20 ND	4 ND	4 ND	4 ND
2,4-Dichlorophenol	4 ND	4 ND	4 ND	2 ND	8 ND	4 ND	4 ND	40.7
2,4-Dimethylphenol	4 ND	4 ND	6.64	3.68	71.6	4 ND	4 ND	14.2
2-Chlorophenol	4 ND	4 ND	4 ND	2 ND	9 ND	4 ND	4 ND	4 ND
Acenaphthene	4 ND	4 ND	4 ND	2 ND	5 ND	4 ND	4 ND	4 ND
Aniline	4 ND	4 ND	4 ND	2 ND	4 ND	4 ND	4 ND	4
Benzo(a)pyrene	4 ND	4 ND	4 ND	2 ND	5 ND	4 ND	4 ND	4 ND
bis(2-Ethylhexyl)phthalate	4 ND	287	4 ND	2 ND	113	46.3	7.73	4 ND
Carbazole	4 ND	4 ND	4 ND	2 ND	24.8	4 ND	4.87	4 ND
Di-n-butyl phthalate	4 ND	4 ND	4 ND	2 ND	4 ND	4 ND	4 ND	4 ND
Dibenzofuran	4 ND	4 ND	4 ND	2 ND	23.1	4 ND	4 ND	4 ND
Fluoranthene	4 ND	4 ND	4 ND	2 ND	47.9	7.23	4.5	4 ND
Fluorene	4 ND	4 ND	4 ND	2 ND	23.3	4 ND	4 ND	4 ND
Hexachlorobutadiene	4 ND	4 ND	4 ND	2 ND	10 ND	5 ND	4 ND	4 ND
Hexachloroethane	5 ND	4 ND	4 ND	3 ND	20 ND	7 ND	5 ND	4 ND
Isophorone	4 ND	4 ND	4 ND	2 ND	4 ND	4 ND	4 ND	4 ND
m,p-Cresol	87.9	10 ND	28.3	6 ND	434	10 ND	67.3	10 ND
Naphthalene	4 ND	4 ND	57.7	16.9	286	5.48	48.4	4 ND
o-Cresol	5.8	4 ND	8.26	6.33	122	4 ND	14.1	8.8
Pentachlorophenol	19.5	8 ND	71.3	16.1	381	8 ND	82.3	8 ND
Phenanthrene	4.13	4 ND	4 ND	2.47	70.8	7.27	8.73	4 ND
Phenol	166	4 ND	55.1	11.6	347	4 ND	54.5	4 ND

Table E-4
BASF Riverview, Michigan
Groundwater Samples
Semivolatile Organics
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

PARAMETER / SAMPLE #	SB-02 J011009 8/8/00 ug/L	SB-03 J011015 8/9/00 ug/L	SMW-01 J030018 8/15/00 ug/L	SMW-02 J011010 8/8/00 ug/L	SMW-03 J030010 8/14/00 ug/L	SMW-04 J053017 8/23/00 ug/L	SMW-04-99 J011003 8/4/00 ug/L	SMW-040 J053016 8/23/00 ug/L
1,2,4,5-Tetrachlorobenzene	4 ND	4 ND	2 ND	4 ND	2 ND	2 ND	2 ND	2 ND
1,2,4-Trichlorobenzene	4 ND	4 ND	2 ND	4 ND	2 ND	2 ND	2 ND	2 ND
2,4,6-Trichlorophenol	4 ND	8.9	2 ND	4 ND	2 ND	4.06	2 ND	4.3
2,4-Dichlorophenol	4 ND	8.72	2 ND	9.24	2 ND	3.98	2 ND	6.61
2,4-Dimethylphenol	4 ND	4 ND	2 ND	4 ND	2 ND	2 ND	2 ND	2 ND
2-Chlorophenol	4 ND	4 ND	2 ND	4 ND	2 ND	2 ND	2 ND	2 ND
Acenaphthene	4 ND	4 ND	2 ND	4 ND	2 ND	6.07	2 ND	7.87
Aniline	4 ND	4 ND	2 ND	4 ND	2 ND	2 ND	2 ND	2 ND
Benzo(a)pyrene	4 ND	4 ND	2 ND	4 ND	2 ND	2 ND	2 ND	2 ND
bis(2-Ethylhexyl)phthalate	4 ND	4 ND	2 ND	4 ND	2 ND	2 ND	2 ND	2 ND
Carbazole	4 ND	4 ND	2 ND	4 ND	2 ND	5.68	2 ND	9.55
Di-n-butyl phthalate	4 ND	4 ND	2 ND	4 ND	2 ND	2 ND	2 ND	2 ND
Dibenzofuran	4 ND	4 ND	2 ND	4 ND	2 ND	4.32	2 ND	6.1
Fluoranthene	4 ND	4 ND	2 ND	4 ND	2 ND	3.61	2 ND	5.11
Fluorene	4 ND	4 ND	2 ND	4 ND	2 ND	4.14	2 ND	6.72
Hexachlorobutadiene	4 ND	4 ND	2 ND	4 ND	2 ND	2 ND	2 ND	2 ND
Hexachloroethane	4 ND	4 ND	2 ND	4 ND	3 ND	2 ND	2 ND	2 ND
Isophorone	4 ND	4 ND	2 ND	4 ND	2 ND	2 ND	2 ND	2 ND
m,p-Cresol	10 ND	10 ND	6 ND	10 ND	6 ND	38.5	6 ND	66.1
Naphthalene	4 ND	4 ND	2 ND	4 ND	2 ND	43.9	2 ND	61.3
o-Cresol	4 ND	4 ND	2 ND	4 ND	2 ND	6.79	2 ND	15.7
Pentachlorophenol	8 ND	8.4	4 ND	8 ND	4 ND	34.8	4 ND	52.3
Phenanthrene	4 ND	4 ND	2 ND	4 ND	2 ND	9.26	2 ND	14
Phenol	4 ND	11	2 ND	4 ND	2 ND	25.8	2 ND	37.5

Table E-4
BASF Riverview, Michigan
Groundwater Samples
Semivolatile Organics
Printed: 1-30-01

URS

DATA SUMMARY
Shrader Lab Packages

SAMPLE # / PARAMETER	SMW-05 J042002 8/16/00 ug/L	SMW-05-99 J011004 8/7/00 ug/L	SMW-06 J042007 8/17/00 ug/L	SMW-06-99 J011005 8/7/00 ug/L	SMW-07 J011002 8/4/00 ug/L	SMW-08 J011006 8/7/00 ug/L	SMW-09 J042009 8/18/00 ug/L	SMW-10 J042006 8/17/00 ug/L
1,2,4,5-Tetrachlorobenzene	2 ND	2 ND	4 ND	2 ND	2 ND	2 ND	2 ND	4 ND
1,2,4-Trichlorobenzene	2 ND	2 ND	4 ND	2 ND	2 ND	2 ND	2 ND	4 ND
2,4,6-Trichlorophenol	48.1	2 ND	4.16	2 ND	2 ND	2 ND	27.2	4.19
2,4-Dichlorophenol	34.6	2 ND	4 ND	2 ND	2 ND	2 ND	7.51	4 ND
2,4-Dimethylphenol	39	2 ND	203	2 ND	2 ND	2 ND	2 ND	181
2-Chlorophenol	17.4	2 ND	4 ND	2 ND	2 ND	2 ND	2 ND	4 ND
Acenaphthene	5.45	2 ND	4.71	2 ND	2 ND	2 ND	2 ND	11.1
Aniline	2 ND	2 ND	4 ND	2 ND	2 ND	2 ND	2 ND	24.8
Benzo(a)pyrene	6.27	2 ND	15	2 ND	2 ND	2 ND	2 ND	21.9
bis(2-Ethylhexyl)phthalate	29.2	2 ND	355	2 ND	2 ND	2 ND	2 ND	266
Carbazole	39.1	2 ND	26.9	2 ND	2 ND	2 ND	2 ND	87.1
Di-n-butyl phthalate	2 ND	2 ND	4 ND	2 ND	2 ND	2 ND	2 ND	4 ND
Dibenzofuran	24.1	2 ND	13	2 ND	2 ND	2 ND	2 ND	58
Fluoranthene	41.6	2 ND	61.9	2 ND	2 ND	2 ND	2 ND	96
Fluorene	33.1	2 ND	20.7	2 ND	2 ND	2 ND	2 ND	60.5
Hexachlorobutadiene	2 ND	2 ND	4 ND	2 ND	2 ND	2 ND	2 ND	4 ND
Hexachloroethane	2 ND	2 ND	4 ND	2 ND	2 ND	2 ND	3 ND	5 ND
Isophorone	2 ND	2 ND	5.57	2 ND	2 ND	2 ND	2 ND	4.99
m,p-Cresol	339	6 ND	658	6 ND	6 ND	6 ND	22.5	699
Naphthalene	224	2 ND	98.8	2 ND	2 ND	2 ND	9.81	911
o-Cresol	78.6	2 ND	192	2 ND	2 ND	2 ND	2 ND	197
Pentachlorophenol	60.6	4 ND	104	4 ND	4 ND	4 ND	4 ND	8 ND
Phenanthrene	87.4	2 ND	75.9	2 ND	2 ND	2 ND	2 ND	211
Phenol	267	2 ND	595	2 ND	2 ND	2 ND	14.5	820

Table E-4
BASF Riverview, Michigan
Groundwater Samples
Semivolatile Organics
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

SAMPLE # / PARAMETER	SMW-11 J053004 8/22/00 ug/L	SMW-12 J042021 8/21/00 ug/L	SMW-13 J053018 8/23/00 ug/L	SMW-14 J042019 8/21/00 ug/L	SMW-15 J042020 8/21/00 ug/L	SMW-16 J053009 8/22/00 ug/L	SMW-17 J053008 8/22/00 ug/L	SMW-18 J042013 8/21/00 ug/L
1,2,4,5-Tetrachlorobenzene	2 ND	4 ND	4 ND	2 ND	2 ND	2 ND	2 ND	2 ND
1,2,4-Trichlorobenzene	2 ND	4 ND	4 ND	2 ND	2 ND	2 ND	2 ND	2 ND
2,4,6-Trichlorophenol	6.53	6.3[illegible]	7.64	3 ND	2 ND	2 ND	2 ND	2 ND
2,4-Dichlorophenol	2 ND	4 ND	5.96	2 ND	2.79	2 ND	2 ND	2 ND
2,4-Dimethylphenol	42.6	4 ND	4 ND	2 ND	2 ND	2 ND	2 ND	2 ND
2-Chlorophenol	2 ND	4 ND	4 ND	4 ND	2 ND	2 ND	2 ND	2 ND
Acenaphthene	2 ND	4 ND	4.15	2 ND	2 ND	2 ND	2 ND	2 ND
Aniline	2 ND	4 ND	4 ND	2 ND	2 ND	2 ND	2 ND	2 ND
Benzo(a)pyrene	3.43	4 ND	11.7	3.1	2 ND	2 ND	2 ND	2 ND
bis(2-Ethylhexyl)phthalate	2 ND	162	16.6	11.4	280	2 ND	2 ND	5.1
Carbazole	2 ND	6.38	29.4	2 ND	2 ND	2 ND	2 ND	2 ND
Di-n-butyl phthalate	2 ND	4 ND	4 ND	2 ND	2 ND	2 ND	2 ND	2 ND
Dibenzofuran	2 ND	4 ND	28.4	4.32	2 ND	2 ND	2 ND	2 ND
Fluoranthene	6.63	4 ND	35.6	17.1	2 ND	2 ND	2 ND	2 ND
Fluorene	2 ND	4 ND	32.7	5.06	2 ND	2 ND	2 ND	2 ND
Hexachlorobutadiene	2 ND	4 ND	4 ND	3 ND	2 ND	2 ND	2 ND	2 ND
Hexachloroethane	2 ND	4 ND	4 ND	3 ND	2 ND	2 ND	2 ND	2 ND
Isophorone	3.63	4 ND	4 ND	2 ND	2 ND	2 ND	2 ND	2 ND
m,p-Cresol	119	46.7	131	6 ND	6 ND	6 ND	6 ND	6 ND
Naphthalene	3.25	4 ND	490	29.9	2 ND	2 ND	2.42	2 ND
o-Cresol	25.6	4 ND	17.4	3 ND	2 ND	2 ND	2 ND	2 ND
Pentachlorophenol	41.9	79.7	61.5	5 ND	4 ND	4 ND	4 ND	4 ND
Phenanthrene	6.32	4 ND	75.5	19.3	2 ND	2 ND	2 ND	2 ND
Phenol	317	189	166	6.25	2 ND	2 ND	2 ND	194

Table E-4
BASF Riverview, Michigan
Groundwater Samples
Semivolatile Organics
Printed: 1-30-01

URS

'DATA SUMMARY
Shrader Lab Packages

SAMPLE # / PARAMETER	SMW-19 J042014 8/21/00 ug/L	SMW-190 J042015 8/21/00 ug/L	SMW-20 J042016 8/21/00 ug/L	SMW-21 J042017 8/21/00 ug/L	SMW-22 J042018 8/21/00 ug/L	SMW-23 J053005 8/22/00 ug/L	SMW-230 J053006 8/22/00 ug/L	SMW-24 J053014 8/23/00 ug/L
1,2,4,5-Tetrachlorobenzene	2 ND	2 ND	6 ND	4 ND	4 ND	2 ND	2 ND	2 ND
1,2,4-Trichlorobenzene	2 ND	2 ND	4 ND	4 ND	4 ND	2 ND	2 ND	2 ND
2,4,6-Trichlorophenol	2 ND	2 ND	14.7	4 ND	4 ND	2 ND	2 ND	2 ND
2,4-Dichlorophenol	2 ND	2 ND	49.2	4 ND	4 ND	2 ND	2 ND	2 ND
2,4-Dimethylphenol	2 ND	2 ND	580	4 ND	4 ND	2 ND	2 ND	2 ND
2-Chlorophenol	2 ND	2 ND	43.7	4 ND	4 ND	2 ND	2 ND	2 ND
Acenaphthene	2 ND	2 ND	110	4 ND	4 ND	2 ND	2 ND	2 ND
Aniline	2 ND	2 ND	4 ND	4 ND	4 ND	2 ND	2 ND	2 ND
Benzo(a)pyrene	2 ND	2 ND	966	4 ND	4 ND	2 ND	2 ND	2 ND
bis(2-Ethylhexyl)phthalate	2 ND	2 ND	2510	4 ND	326	2 ND	2 ND	2 ND
Carbazole	2 ND	2 ND	1110	4 ND	4 ND	2 ND	2 ND	2 ND
Di-n-butyl phthalate	2 ND	2 ND	4 ND	4 ND	4 ND	2 ND	2 ND	2 ND
Dibenzofuran	2 ND	2 ND	1080	4 ND	4 ND	2 ND	2 ND	2 ND
Fluoranthene	2 ND	2 ND	3390	4 ND	4 ND	2 ND	2 ND	2 ND
Fluorene	2 ND	2 ND	1250	4 ND	4 ND	2 ND	2 ND	2 ND
Hexachlorobutadiene	2 ND	2 ND	6 ND	4 ND	4 ND	2 ND	2 ND	2 ND
Hexachloroethane	2 ND	2 ND	60 ND	4 ND	4 ND	2 ND	2 ND	2 ND
Isophorone	2 ND	2 ND	7 ND	4 ND	4 ND	2 ND	2 ND	2 ND
m,p-Cresol	6 ND	6 ND	3900	10 ND	46.2	6 ND	6 ND	6 ND
Naphthalene	2 ND	2 ND	5340	4 ND	8.14	2 ND	2 ND	5.39
o-Cresol	2 ND	2 ND	1210	4 ND	4 ND	2 ND	2 ND	2 ND
Pentachlorophenol	4 ND	4 ND	254	8 ND	8 ND	4 ND	4 ND	4 ND
Phenanthrene	2 ND	2 ND	4820	4 ND	4 ND	2 ND	2 ND	2 ND
Phenol	2 ND	2 ND	2310	4 ND	39.1	2 ND	2 ND	2 ND

Table E-4
BASF Riverview, Michigan
Groundwater Samples
Semivolatile Organics
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

SAMPLE # / PARAMETER	SMW-25 J053015 8/23/00 ug/L	SMW-26 J053011 8/23/00 ug/L	SMW-260 J053012 8/23/00 ug/L	SMW-27 J053013 8/23/00 ug/L
1,2,4,5-Tetrachlorobenzene	2 ND	2 ND	2 ND	2 ND
1,2,4-Trichlorobenzene	2 ND	2 ND	2 ND	2 ND
2,4,6-Trichlorophenol	9.83	3.89	2.97	2.52
2,4-Dichlorophenol	8.54	5.61	6.11	4.24
2,4-Dimethylphenol	2 ND	2 ND	3.19	832
2-Chlorophenol	2 ND	2 ND	2 ND	2 ND
Acenaphthene	2 ND	2.16	2.41	2 ND
Aniline	2 ND	2 ND	2 ND	4.31
Benzo(a)pyrene	2 ND	2 ND	2 ND	4.03
bis(2-Ethylhexyl)phthalate	2 ND	2 ND	2 ND	5.62
Carbazole	2 ND	10.3	11.6	19.7
Di-n-butyl phthalate	2 ND	2 ND	2 ND	2 ND
Dibenzofuran	2 ND	7.33	7.3	10.3
Fluoranthene	2 ND	2.87	3.22	9.6
Fluorene	2 ND	8.19	8.44	11.6
Hexachlorobutadiene	2 ND	2 ND	2 ND	2 ND
Hexachloroethane	2 ND	2 ND	2 ND	2 ND
Isophorone	2 ND	2 ND	2 ND	2 ND
m,p-Cresol	6 ND	26.9	62.5	428
Naphthalene	13.3	208	247	236
o-Cresol	2 ND	2 ND	6.99	85.2
Pentachlorophenol	4 ND	55.9	69.6	32
Phenanthrene	2 ND	11.7	12.9	19.8
Phenol	2 ND	28.4	39.4	328

Table E-4
BASF Riverview, Michigan
Groundwater Samples
PCBs, Total Metals, Inorganics, General Chemistry
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

	SAMPLE # / PARAMETER	BMW-1 J062003 8/25/00	DMW-01 J030009 8/11/00	DMW-02 J011016 8/9/00	DMW-03 J030019 8/15/00	DMW-04 J030014 8/14/00	DMW-05 J011019 8/9/00	DMW-06 J011018 8/9/00
PCBs	Arochlor-1242 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
	Arochlor-1248 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
	Arochlor-1254 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
	Arochlor-1260 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
	Total PCBs (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
Metals	Arsenic (mg/L)	0.004 ND	0.004 ND	0.004 ND	0.004 ND	0.004 ND	0.004 ND	0.025
	Barium (mg/L)	0.021	0.034	0.057	0.018	0.021	0.028	0.023
	Cadmium (mg/L)	0.0005 ND	0.0005 ND	0.0005 ND	0.0005 ND	0.0005 ND	0.0005 ND	0.0005 ND
	Calcium (mg/L)	517	268	281	556	359	324	239
	Chromium (mg/L)	0.004 ND	0.004 ND	0.004 ND	0.004 ND	0.004 ND	0.004 ND	0.004 ND
	Copper (mg/L)	0.004 ND	0.007	0.004 ND	0.004 ND	0.004 ND	0.006	0.004 ND
	Lead (mg/L)	0.002 ND	0.008	0.004	0.002 ND	0.002	0.004	0.004
	Magnesium (mg/L)	204	147	116	267	172	161	14.2
	Mercury (mg/L)	0.0002 ND	0.0002 ND	0.0002 ND	0.0002 ND	0.0002 ND	0.0002 ND	0.0002 ND
	Selenium (mg/L)	0.004 ND	0.004 ND	0.004 ND	0.004 ND	0.004 ND	0.005	0.004 ND
	Sodium (mg/L)	102	106	344	185	286	102	309
	Zinc (mg/L)	0.01 ND	0.022	0.024	0.013	0.019	0.032	0.01 ND
Inorganics	Cyanide, Total (mg/L)	0.005 ND	0.005 ND	0.008	0.005 ND	0.005 ND	0.005 ND	0.029
	Nitrogen, Ammonia (mg/L)	0.67	0.25 ND	0.42	0.27	0.94	0.28	0.72
General Chemistry	Chemical Oxygen Demand (mg/L)	134	10	84	10 ND	22	30	50
	Chloride (mg/L)	158	192	557	402	641	151	661
	Hardness (mg CaCO3/L)	2130	1270	1180	2490	1600	1470	655
	pH at 25 deg C	7.16	7.1	7.04	8.67	7	7.32	9.28
	Sulfate (mg/L)	1770	1050	710	278	1050	1230	390
	Sulfide (mg/L)	62.6	0.02 ND	0.02 ND	0.07	0.02 ND	0.02 ND	0.02 ND

Table E-4
BASF Riverview, Michigan
Groundwater Samples
PCBs, Total Metals, Inorganics, General Chemistry
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

	SAMPLE # / PARAMETER	DMW-09 J062005 8/28/00	DMW-090 J062006 8/28/00	DMW-10 J053019 8/23/00	DMW-11 J062001 8/24/00	DMW-12 J062008 8/29/00	DMW-13 J062002 8/24/00	IMW-01 J042011 8/18/00
PCBs	Arochlor-1242 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
	Arochlor-1248 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
	Arochlor-1254 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
	Arochlor-1260 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
	Total PCBs (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
Metals	Arsenic (mg/L)	0.004 ND	0.004 ND	0.004 ND	0.004 ND	0.004 ND	0.004 ND	0.005
	Barium (mg/L)	0.043	0.044	0.057	0.105	0.055	0.094	0.098
	Cadmium (mg/L)	0.0005 ND	0.0005 ND	0.0005 ND	0.0005 ND	0.0005 ND	0.0005 ND	0.0005 ND
	Calcium (mg/L)	410	385	377	355	431	324	242
	Chromium (mg/L)	0.004 ND	0.004 ND	0.004 ND	0.007	0.012	0.004 ND	0.094
	Copper (mg/L)	0.008	0.008	0.004 ND	0.011	0.011	0.004	0.011
	Lead (mg/L)	0.007	0.008	0.002	0.005	0.006	0.01	0.004
	Magnesium (mg/L)	194	187	198	169	104	168	117
	Mercury (mg/L)	0.0002 ND	0.0002 ND	0.0002 ND	0.0002 ND	0.0002 ND	0.0002 ND	0.0002 ND
	Selenium (mg/L)	0.004 ND	0.004 ND	0.004	0.004 ND	0.006	0.004 ND	0.004 ND
	Sodium (mg/L)	89	83.7	96	157	102	79.1	437
	Zinc (mg/L)	0.071	0.066	0.013	0.027	0.02	0.018	0.01 ND
Inorganics	Cyanide, Total (mg/L)	0.005 ND	0.005 ND	0.005 ND	0.017	0.005 ND	0.005 ND	0.039
	Nitrogen, Ammonia (mg/L)	0.76	0.56	1.08	0.46		0.67	0.47
General Chemistry	Chemical Oxygen Demand (mg/L)	44	22	15	57	-------	22	55
	Chloride (mg/L)	242	243	142	328	-------	166	487
	Hardness (mg CaCO3/L)	1820	1730	1760	1580	1500	1500	1090
	pH at 25 deg C	7.21	2.27	7.66	6.91	-------	7.3	6.85
	Sulfate (mg/L)	1250	1250	1640	1300	-------	1250	131
	Sulfide (mg/L)	0.02 ND	-------	-------	0.02 ND	0.02 ND	0.02 ND	0.03

Table E-4
BASF Riverview, Michigan
Groundwater Samples
PCBs, Total Metals, Inorganics, General Chemistry
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

	SAMPLE # / PARAMETER	IMW-010 J042005 8/17/00	IMW-05 J042001 8/16/00	IMW-06 J042008 8/17/00	IMW-09 J042010 8/18/00	IMW-11 J053002 8/22/00	IMW-110 J053003 8/22/00	IMW-12 J053001 8/22/00
PCBs	Arochlor-1242 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
	Arochlor-1248 (ug/L)	0.2 ND	4.0	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
	Arochlor-1254 (ug/L)	48.2	0.2 ND	14.3	0.2 ND	0.2 ND	0.2 ND	3.61
	Arochlor-1260 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
	Total PCBs (ug/L)	48.2	4.0	14.3	0.2 ND	0.2 ND	0.2 ND	3.61
Metals	Arsenic (mg/L)	13.1	0.773	15.7	0.081	5.02	4.89	0.318
	Barium (mg/L)	0.128	0.067	0.026	0.062	0.139	0.128	0.343
	Cadmium (mg/L)	0.002 ND	0.006	0.002 ND	0.0005 ND	0.0005 ND	0.002 ND	0.002 ND
	Calcium (mg/L)	8	16.2	15.1	5.8	7.9	7.5	3.2
	Chromium (mg/L)	0.405	0.197	0.255	0.051	0.901	0.857	1.22
	Copper (mg/L)	0.016	0.078	0.022	0.032	0.028	0.04	0.014
	Lead (mg/L)	0.059	0.048	0.025	0.064	0.008 ND	0.01	0.02
	Magnesium (mg/L)	0.7	21.4	0.5 ND	1.2	0.5 ND	0.5 ND	0.5 ND
	Mercury (mg/L)	0.487	0.0996	0.487	0.0219	0.0387	0.0494	0.0016
	Selenium (mg/L)	0.015	0.01	0.013	0.004 ND	0.024	0.023	0.018
	Sodium (mg/L)	10800	4510	9480	1970	9280	9360	17600
	Zinc (mg/L)	0.068	0.206	0.045	0.058	0.044	0.062	0.046
Inorganics	Cyanide, Total (mg/L)	15.7	3.3	9.28	1.12	5.95	6.04	16.5
	Nitrogen, Ammonia (mg/L)	38.3	8.8	33.4	4.1	40.1	40.3	58.7
General Chemistry	Chemical Oxygen Demand (mg/L)	3920	2840	4090	522	3560	3650	4930
	Chloride (mg/L)	949	1100	827	849	933	835	1180
	Hardness (mg CaCO3/L)	22.9	129	37.7	19.4	19.7	18.7	8
	pH at 25 deg C	12.66	10.22	12.5	10.18	11.33	11.3	10.35
	Sulfate (mg/L)	2550	1150	1550	100	740	770	85
	Sulfide (mg/L)	14.4	1.02	12.8	11.3	27.6	24.8	6.9

Table E-4
BASF Riverview, Michigan
Groundwater Samples
PCBs, Total Metals, Inorganics, General Chemistry
Printed: 1-30-01

URS

DATA SUMMARY
Shrader Lab Packages

	SAMPLE # / PARAMETER	IMW-13 J053007 8/22/00	MW-A J030013 8/11/00	MW-B J030004 8/10/00	MW-C J030005 8/10/00	MW-D J011012 8/8/00	MW-D0 J011013 8/8/00	MW-E J011017 8/9/00
PCBs	Arochlor-1242 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
	Arochlor-1248 (ug/L)	0.2 ND	0.2 ND	3.74	0.2 ND	0.2 ND	0.2 ND	0.2 ND
	Arochlor-1254 (ug/L)	4.35	0.2 ND	0.2 ND	0.2 ND	6.04	4.51	0.2 ND
	Arochlor-1260 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
	Total PCBs (ug/L)	4.35	0.2 ND	3.74	0.2 ND	6.04	4.51	0.2 ND
Metals	Arsenic (mg/L)	1.49	0.068	0.683	0.079	14.3	13.7	2.22
	Barium (mg/L)	0.329	0.011	0.043	0.043	0.021	0.019	0.021
	Cadmium (mg/L)	0.002 ND	0.0005 ND	0.0005 ND	0.0005 ND	0.002 ND	0.002 ND	0.0014
	Calcium (mg/L)	11.6	12.1	2.4	57.5	4.8	4.5	15.4
	Chromium (mg/L)	0.684	0.049	0.194	0.013	0.129	0.123	0.068
	Copper (mg/L)	0.032	0.004 ND	0.009	0.019	0.013	0.012	0.079
	Lead (mg/L)	0.009	0.004	0.014	0.019	0.011	0.011	0.798
	Magnesium (mg/L)	2.5	10.6	1	31.5	0.5 ND	0.5 ND	3.5
	Mercury (mg/L)	2.32	0.0021	0.019	0.0013	0.919	0.716	0.341
	Selenium (mg/L)	0.033	0.004 ND	0.008	0.004 ND	0.01	0.009	0.004
	Sodium (mg/L)	14200	1760	4590	728	9520	9390	1950
	Zinc (mg/L)	0.081	0.02	0.035	0.014	0.02 ND	0.02 ND	0.224
Inorganics	Cyanide, Total (mg/L)	7.62	0.78	2.91	5.65	9.56	9.47	1.49
	Nitrogen, Ammonia (mg/L)	95.1	7.98	12.3	3.45	28.6	28.8	6.95
General Chemistry	Chemical Oxygen Demand (mg/L)	8470	727	3220	671	2200	2200	745
	Chloride (mg/L)	893	441	1010	197	613	622	235
	Hardness (mg CaCO3/L)	39.3	73.9	10.1	273	12	11.2	52.9
	pH at 25 deg C	10.63	9.6	10.2	9	12.32	12.36	11.52
	Sulfate (mg/L)	1050	200	750	460	1750	1750	550
	Sulfide (mg/L)	13.3	19.5	38.2	1.4	3.73	3.89	0.48

Table E-4
BASF Riverview, Michigan
Groundwater Samples
PCBs, Total Metals, Inorganics, General Chemistry
Printed: 1-30-01

URS

DATA SUMMARY
Shrader Lab Packages

	SAMPLE # / PARAMETER	MW-G J011007 8/7/00	MW-H J030020 8/15/00	MW-I J030021 8/15/00	MW-J J042003 8/16/00	MW-K J030015 8/14/00	PZ-1 J030006 8/10/00	PZ-2 J030011 8/11/00
PCBs	Arochlor-1242 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
	Arochlor-1248 (ug/L)	0.2 ND	0.2 ND	0.646	0.2 ND	0.2 ND	0.2 ND	0.2 ND
	Arochlor-1254 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
	Arochlor-1260 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
	Total PCBs (ug/L)	0.2 ND	0.2 ND	0.646	0.2 ND	0.2 ND	0.2 ND	0.2 ND
Metals	Arsenic (mg/L)	0.004 ND	0.168	0.869	0.127	0.201	0.122	0.159
	Barium (mg/L)	0.05	0.167	0.039	0.258	0.167	0.396	0.062
	Cadmium (mg/L)	0.0005 ND	0.001 ND	0.0009	0.002 ND	0.002 ND	0.0005 ND	0.0005 ND
	Calcium (mg/L)	192	71.2	9.9	3.4	1.9	11.6	2.9
	Chromium (mg/L)	0.011	0.286	0.046	0.286	0.663	0.164	0.092
	Copper (mg/L)	0.011	0.029	0.044	0.029	0.019	0.013	0.006
	Lead (mg/L)	0.004	0.004 ND	0.012	0.069	0.008 ND	0.006	0.005
	Magnesium (mg/L)	276	126	15.9	13.9	0.6	3.4	0.5 ND
	Mercury (mg/L)	0.0003	0.0012	0.0008	0.113	0.0387	0.0016	0.0147
	Selenium (mg/L)	0.004 ND	0.022	0.004 ND	0.008 ND	0.018	0.009	0.004
	Sodium (mg/L)	1630	5050	1560	11400	16600	4470	3620
	Zinc (mg/L)	0.035	0.027	0.051	0.045	0.041	0.027	0.014
Inorganics	Cyanide, Total (mg/L)	0.185	2.81	0.51	2.78	24.8	2.1	1.33
	Nitrogen, Ammonia (mg/L)	5.06	9.18	5.61	32	58.2	4.55	10.9
General Chemistry	Chemical Oxygen Demand (mg/L)	221	3660	789	2660	4400	1580	894
	Chloride (mg/L)	166	1420	539	528	1340	3590	1050
	Hardness (mg CaCO3/L)	1620	697	90.2	65.7	7.22	43	7.2
	pH at 25 deg C	7.58	8.6	9.47	10.26	9.6	9.7	10.1
	Sulfate (mg/L)	2640	269	770	66	150	142	55
	Sulfide (mg/L)	4.56	0.35	4.7	7.73	6.8	0.2 ND	21.6

Table E-4
BASF Riverview, Michigan
Groundwater Samples
PCBs, Total Metals, Inorganics, General Chemistry
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

	SAMPLE # / PARAMETER	PZ-3 J030012 8/11/00	PZ-4 J030002 8/10/00	PZ-5 J030008 8/11/00	PZ-6 J030001 8/10/00	SB-01 J011011 8/8/00	SB-02 J011009 8/8/00	SB-03 J011015 8/9/00
PCBs	Arochlor-1242 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
	Arochlor-1248 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
	Arochlor-1254 (ug/L)	0.2 ND	6.55	0.391	0.2 ND	0.2 ND	0.2 ND	0.2 ND
	Arochlor-1260 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
	Total PCBs (ug/L)	0.2 ND	6.55	0.391	0.2 ND	0.2 ND	0.2 ND	0.2 ND
Metals	Arsenic (mg/L)	0.035	0.262	0.308	0.065	0.622	0.011	0.216
	Barium (mg/L)	0.021	0.038	0.368	0.024	0.375	0.075	0.096
	Cadmium (mg/L)	0.0005 ND	0.0025 ND	0.0005 ND	0.0005 ND	0.002 ND	0.0005 ND	0.002
	Calcium (mg/L)	6.1	3.1	29.8	3.7	17.1	162	4.2
	Chromium (mg/L)	0.017	0.142	0.428	0.05	0.463	0.017	3.43
	Copper (mg/L)	0.022	0.015	0.06	0.032	0.032	0.023	0.298
	Lead (mg/L)	0.022	0.039	0.005	0.113	0.01	0.021	0.054
	Magnesium (mg/L)	2.8	0.5 ND	42.1	2.2	24.5	111	7.6
	Mercury (mg/L)	0.0034	0.372	0.0033	0.0181	0.0008	0.0003	0.0296
	Selenium (mg/L)	0.004 ND	0.01	0.03	0.004 ND	0.019	0.004 ND	0.034
	Sodium (mg/L)	1130	6120	5230	1560	6710	1110	13200
	Zinc (mg/L)	0.01 ND	0.033	0.062	0.065	0.125	0.022	0.145
Inorganics	Cyanide, Total (mg/L)	0.53	2.42	10.3	1.18	4.75	0.098	2.48
	Nitrogen, Ammonia (mg/L)	1.69	15.8	13.6	2.71	42.1	8.12	46.1
General Chemistry	Chemical Oxygen Demand (mg/L)	266	3140	6120	695	1550	191	4000
	Chloride (mg/L)	316	1420	3260	742	590	331	1580
	Hardness (mg CaCO3/L)	26.8	7.7	248	18.3	144	862	41.8
	pH at 25 deg C	9.5	11.3	9.2	10.03	9.25	7.7	9.61
	Sulfate (mg/L)	206	750	180	630	960	2000	2000
	Sulfide (mg/L)	7	14.3	1.7	8.8	16.5	0.47	1.5

Table E-4
BASF Riverview, Michigan
Groundwater Samples
PCBs, Total Metals, Inorganics, General Chemistry
Printed: 1-30-01

' DATA SUMMARY
Shrader Lab Packages

URS

	SAMPLE # / PARAMETER	SMW-01 J030018 8/15/00	SMW-02 J011010 8/8/00	SMW-03 J030010 8/14/00	SMW-04 J053017 8/23/00	SMW-04-99 J011003 8/4/00	SMW-040 J053016 8/23/00	SMW-05 J042002 8/16/00
PCBs	Arochlor-1242 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
	Arochlor-1248 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	2.58
	Arochlor-1254 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
	Arochlor-1260 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
	Total PCBs (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	2.58
Metals	Arsenic (mg/L)	0.055	0.201	0.004 ND	0.095	0.004 ND	0.101	0.526
	Barium (mg/L)	0.135	0.281	0.07	0.107	0.032	0.1	0.019
	Cadmium (mg/L)	0.0005 ND	0.001 ND	0.0005 ND	0.001 ND	0.0022	0.0005 ND	0.0005 ND
	Calcium (mg/L)	39.8	97.6	81.8	4	493	3.9	39.9
	Chromium (mg/L)	0.071	0.566	0.004 ND	0.071	0.004 ND	0.072	0.079
	Copper (mg/L)	0.018	0.032	0.008	0.008	0.009	0.006	0.018
	Lead (mg/L)	0.006	0.012	0.004 ND	0.006	0.004	0.005	0.016
	Magnesium (mg/L)	54	49.9	39.7	5.9	350	6.2	22.7
	Mercury (mg/L)	0.0003	0.0009	0.0002 ND	0.0009	0.0002 ND	0.0006	0.0189
	Selenium (mg/L)	0.004 ND	0.011	0.004 ND	0.004 ND	0.008 ND	0.004 ND	0.004
	Sodium (mg/L)	1340	3980	766	2300	445	2490	2950
	Zinc (mg/L)	0.02	0.042	0.014	0.03	0.099	0.028	0.049
Inorganics	Cyanide, Total (mg/L)	0.45	0.79	0.035	0.936	0.006	0.943	2.07
	Nitrogen, Ammonia (mg/L)	1.94	24.4	0.58	10.8	3.98	10.5	7.34
General Chemistry	Chemical Oxygen Demand (mg/L)	708	2140	82	1020	35	1010	1480
	Chloride (mg/L)	206	664	80.5	561	138	590	564
	Hardness (mg CaCO3/L)	322	449	368	34.3	2670	35.3	193
	pH at 25 deg C	7.2	8.49	7.8	9.77	6.25	9.77	9.92
	Sulfate (mg/L)	300	192	570	26	2390	25	1960
	Sulfide (mg/L)	0.74	0.22	0.02 ND	15.2	0.02 ND	19.7	6.9

Table E-4
BASF Riverview, Michigan
Groundwater Samples
PCBs, Total Metals, Inorganics, General Chemistry
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

	SAMPLE # / PARAMETER	SMW-05-99 J011004 8/7/00	SMW-06 J042007 8/17/00	SMW-06-99 J011005 8/7/00	SMW-07 J011002 8/4/00	SMW-08 J011001 8/4/00	SMW-09 J042009 8/18/00	SMW-10 J042006 8/17/00
PCBs	Arochlor-1242 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
	Arochlor-1248 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
	Arochlor-1254 (ug/L)	0.2 ND	11.0	0.2 ND	0.2 ND	0.2 ND	0.2 ND	53.5
	Arochlor-1260 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
	Total PCBs (ug/L)	0.2 ND	11.0	0.2 ND	0.2 ND	0.2 ND	0.2 ND	53.5
Metals	Arsenic (mg/L)	0.004 ND	15.3	0.106	0.004 ND	0.004 ND	0.053	11.4
	Barium (mg/L)	0.053	0.016	0.121	0.071	0.054	0.028	0.153
	Cadmium (mg/L)	0.0005 ND	0.002 ND	0.0005 ND	0.001 ND	0.0005 ND	0.0005 ND	0.002
	Calcium (mg/L)	250	12.3	6.4	226	265	4.6	12.7
	Chromium (mg/L)	0.006	0.178	0.044	0.004 ND	0.004 ND	0.026	0.299
	Copper (mg/L)	0.008	0.013	0.017	0.01	0.008	0.018	0.021
	Lead (mg/L)	0.002 ND	0.01	0.003	0.003	0.002 ND	0.042	0.077
	Magnesium (mg/L)	154	0.5 ND	57.2	52.6	83.4	0.9	0.7
	Mercury (mg/L)	0.0002 ND	0.423	0.0005	0.0002 ND	0.0002 ND	0.0174	0.291
	Selenium (mg/L)	0.004 ND	0.013	0.005	0.004 ND	0.004 ND	0.004 ND	0.015
	Sodium (mg/L)	816	9340	5170	318	295	1390	10500
	Zinc (mg/L)	0.01 ND	0.028	0.018	0.031	0.033	0.022	0.062
Inorganics	Cyanide, Total (mg/L)	0.131	9.72	0.582	0.006	0.005 ND	0.9	15.1
	Nitrogen, Ammonia (mg/L)	0.31	33.8	17.6	0.76	1.52	2.37	37.5
General Chemistry	Chemical Oxygen Demand (mg/L)	65	2720	305	40	35	370	3780
	Chloride (mg/L)	127	808	1710	121	74	434	1010
	Hardness (mg CaCO3/L)	1260	30.7	252	781	1010	15.2	34.6
	pH at 25 deg C	7.43	13.1	8.5	7.32	7.14	9.86	12.87
	Sulfate (mg/L)	1950	1600	725	670	800	110	2550
	Sulfide (mg/L)	0.02 ND	12.5	36.2	0.02 ND	0.02 ND	13.2	14.8

Table E-4
BASF Riverview, Michigan
Groundwater Samples
PCBs, Total Metals, Inorganics, General Chemistry
Printed: 1-30-01

URS

DATA SUMMARY
Shrader Lab Packages

	SAMPLE # / PARAMETER	SMW-11 J053004 8/22/00	SMW-12 J042021 8/21/00	SMW-13 J053018 8/23/00	SMW-14 J042019 8/21/00	SMW-15 J042020 8/21/00	SMW-16 J053009 8/22/00	SMW-17 J053008 8/22/00
PCBs	Arochlor-1242 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	-------	0.2 ND	0.2 ND
	Arochlor-1248 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	-------	0.2 ND	0.2 ND
	Arochlor-1254 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	-------	0.2 ND	0.2 ND
	Arochlor-1260 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	-------	0.2 ND	0.2 ND
	Total PCBs (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	-------	0.2 ND	0.2 ND
Metals	Arsenic (mg/L)	6.61	0.753	0.341	0.019	0.044	0.004 ND	0.005
	Barium (mg/L)	0.228	0.132	0.065	0.096	0.068	0.044	1.05
	Cadmium (mg/L)	0.001 ND	0.002 ND	0.001 ND	0.001 ND	0.0005 ND	0.0005 ND	0.0005 ND
	Calcium (mg/L)	13.1	3	27.8	93.4	23	106	27.7
	Chromium (mg/L)	0.97	0.586	0.202	0.009	0.006	0.033	0.004 ND
	Copper (mg/L)	0.039	0.087	0.048	0.004	0.06	0.004 ND	0.004 ND
	Lead (mg/L)	0.014	0.105	0.054	0.004 ND	0.002	0.002 ND	0.007
	Magnesium (mg/L)	0.5 ND	0.5 ND	1.4	42.2	18.4	0.5 ND	4.5
	Mercury (mg/L)	0.037	0.0269	0.259	0.001	0.0003	0.0002 ND	0.0002 ND
	Selenium (mg/L)	0.029	0.037	0.011	0.004 ND	0.006	0.004 ND	0.004 ND
	Sodium (mg/L)	6880	22200	5260	580	2120	64.8	13.2
	Zinc (mg/L)	0.097	0.057	0.096	0.01 ND	0.021	0.01 ND	0.01 ND
Inorganics	Cyanide, Total (mg/L)	12.4	16	2.72	0.062	-------	0.005 ND	0.48
	Nitrogen, Ammonia (mg/L)	50	37.8	39.7	0.89	-------	0.38	6.05
General Chemistry	Chemical Oxygen Demand (mg/L)	5070	3230	3350	194	-------	10 ND	119
	Chloride (mg/L)	1030	1250	531	81.1	-------	72.6	11.2
	Hardness (mg CaCO3/L)	32.7	7.49	75.2	407	133	265	87.7
	pH at 25 deg C	11.16	10.49	11.37	8.5	-------	11.63	9.98
	Sulfate (mg/L)	770	150	2040	400	-------	112	38
	Sulfide (mg/L)	21.6	1.95	6.79	0.67	0.05	0.02 ND	1.5

Table E-4
BASF Riverview, Michigan
Groundwater Samples
PCBs, Total Metals, Inorganics, General Chemistry
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

	SAMPLE # / PARAMETER	SMW-18 J042013 8/21/00	SMW-19 J042014 8/21/00	SMW-190 J042015 8/21/00	SMW-20 J042016 8/21/00	SMW-21 J042017 8/21/00	SMW-22 J042018 8/21/00	SMW-23 J053005 8/22/00
PCBs	Arochlor-1242 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
	Arochlor-1248 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
	Arochlor-1254 (ug/L)	0.2 ND	0.2 ND	0.2 ND	59.4	0.2 ND	0.2 ND	0.2 ND
	Arochlor-1260 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
	Total PCBs (ug/L)	0.2 ND	0.2 ND	0.2 ND	59.4	0.2 ND	0.2 ND	0.2 ND
Metals	Arsenic (mg/L)	0.008	0.005	0.004 ND	0.734	0.006	0.301	0.089
	Barium (mg/L)	0.07	0.485	0.47	0.033	0.049	0.428	0.087
	Cadmium (mg/L)	0.0005 ND	0.0005 ND	0.0005 ND	0.001 ND	0.0005 ND	0.001 ND	0.0005 ND
	Calcium (mg/L)	124	68.1	64.2	20	211	3.8	84.4
	Chromium (mg/L)	0.004 ND	0.004 ND	0.004 ND	0.496	0.004 ND	0.89	0.04
	Copper (mg/L)	0.004 ND	0.004 ND	0.004 ND	0.028	0.013	0.048	0.019
	Lead (mg/L)	0.005	0.006	0.003	0.035	0.004	0.097	0.004
	Magnesium (mg/L)	6	13.2	12.4	0.5 ND	308	5.5	82.3
	Mercury (mg/L)	0.0002 ND	0.0002 ND	0.0002 ND	1.71	0.0008	0.0269	0.0002 ND
	Selenium (mg/L)	0.004 ND	0.004 ND	0.004 ND	0.022	0.004 ND	0.027	0.004 ND
	Sodium (mg/L)	161	82.4	78.4	9750	939	11200	786
	Zinc (mg/L)	0.01 ND	0.012	0.01 ND	0.094	0.01 ND	0.101	0.029
Inorganics	Cyanide, Total (mg/L)	0.006	0.009	0.027	3.36	0.013	6.44	0.087
	Nitrogen, Ammonia (mg/L)	9.47	3.94	3.96	23.4	0.48	78.2	8.29
General Chemistry	Chemical Oxygen Demand (mg/L)	130	47	52	9160	97	6310	102
	Chloride (mg/L)	298	63.4	61.4	1410	109	1500	222
	Hardness (mg CaCO3/L)	334	224	211	49.9	1800	32.1	550
	pH at 25 deg C	11.17	7.29	7.1	12.08	7.43	9.22	8.55
	Sulfate (mg/L)	56	34	34	2400	2280	154	1150
	Sulfide (mg/L)	1.16	0.03	0.04	12.2	0.07	6.9	0.06

Table E-4
BASF Riverview, Michigan
Groundwater Samples
PCBs, Total Metals, Inorganics, General Chemistry
Printed: 1-30-01

DATA SUMMARY
Shrader Lab Packages

URS

	SAMPLE # / PARAMETER	SMW-230 J053006 8/22/00	SMW-24 J053014 8/23/00	SMW-25 J053015 8/23/00	SMW-26 J053011 8/23/00	SMW-260 J053012 8/23/00	SMW-27 J053013 8/23/00
PCBs	Arochlor-1242 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
	Arochlor-1248 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
	Arochlor-1254 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
	Arochlor-1260 (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
	Total PCBs (ug/L)	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND	0.2 ND
Metals	Arsenic (mg/L)	0.1	0.063	0.023	0.186	0.189	20.2
	Barium (mg/L)	0.091	0.022	0.011	0.014	0.015	0.034
	Cadmium (mg/L)	0.0005 ND	0.0005 ND	0.0005 ND	0.0032	0.0035	0.0054
	Calcium (mg/L)	92.2	8.2	13.1	15	20.2	5.8
	Chromium (mg/L)	0.03	0.024	0.019	0.021	0.021	0.254
	Copper (mg/L)	0.013	0.004 ND	0.004	0.036	0.038	0.039
	Lead (mg/L)	0.002	0.002 ND	0.005	0.142	0.158	0.121
	Magnesium (mg/L)	85.6	44.6	10	0.5 ND	0.5 ND	0.5 ND
	Mercury (mg/L)	0.0002 ND	0.0009	0.0008	0.0235	0.0218	0.739
	Selenium (mg/L)	0.004 ND	0.004 ND	0.004 ND	0.004 ND	0.004 ND	0.011
	Sodium (mg/L)	769	1870	1030	820	865	6230
	Zinc (mg/L)	0.01 ND	0.01 ND	0.015	0.154	0.16	0.299
Inorganics	Cyanide, Total (mg/L)	0.09	0.686	0.337	0.451	0.436	1.91
	Nitrogen, Ammonia (mg/L)	8.31	4.23	1.53	4.67	4.63	17.6
General Chemistry	Chemical Oxygen Demand (mg/L)	89	283	204	342	350	925
	Chloride (mg/L)	202	218	233	261	247	335
	Hardness (mg CaCO3/L)	583	204	73.9	37.5	50.4	14.5
	pH at 25 deg C	8.35	9.44	9.5	11.38	11.34	11.42
	Sulfate (mg/L)	1150	920	620	1050	1050	1050
	Sulfide (mg/L)	0.05	15.3	11.3	2.63	2.79	6.58

Table E-5
BASF Riverview, Michigan
Soil Samples
Detected Dioxins
Printed: 1--01

DATA SUMMARY
Pace Lab Data Package

URS

CONGENER / SAMPLE #	DMW-12 (04'-06') 2234283 8/1/00 ng/kg	IMW-05 (0'-02') 2234325 8/8/00 ng/kg	IMW-06 (0'-02') 2234317 8/8/00 ng/kg	IMW-13 (04'-06') 2234291 8/3/00 ng/kg	SMW-04 (04'-06') 2234309 8/3/00 ng/kg
1,2,3,4,6,7,8-HpCDD	0.92 J	3300	540	1700	1700
HpCDD, Total	2 J	6500	1100	3300	3300
1,2,3,4,6,7,8-HpCDF	0.28 ND	380	39	61	61
1,2,3,4,7,8,9-HpCDF	0.63 ND	52	7.9 J	4.9 J	4.9 J
HpCDF, Total	0.45 ND	1900	95	370	370
1,2,3,4,7,8-HxCDD	0.45 ND	19 ND	5 J	9.9	9.9
1,2,3,6,7,8-HxCDD	0.43 ND	100	22 J	50	50
1,2,3,7,8,9-HxCDD	0.46 ND	39	13 J	26	26
HxCDD, Total	0.45 ND	940	260	570	570
1,2,3,4,7,8-HxCDF	0.23 ND	110	17 J	8.9	8.9
1,2,3,6,7,8-HxCDF	0.25 ND	30	8.8 E	17 E	17 E
1,2,3,7,8,9-HxCDF	0.19 ND	16 ND	4.7 J	1.7 J	1.7 J
2,3,4,6,7,8-HxCDF	0.33 ND	25 I	4.4 I	5	5
HxCDF, Total	0.25 ND	560	65	110	110
1,2,3,7,8-PeCDD	0.4 ND	6.3 I	4.9 I	13	13
PeCDD, Total	0.4 ND	4.5 ND	8.1 J	83	83
1,2,3,7,8-PeCDF	0.29 ND	40	8.6 J	5.5	5.5
2,3,4,7,8-PeCDF	0.38 ND	33	8.3 J	4.7 J	4.7 J
PeCDF, Total	0.34 ND	180	47	30	30
2,3,7,8-TCDD	0.22 ND	2.6 ND	2.2 I	5.7	5.7
TCDD, Total	0.22 ND	21	7.2	27	27
2,3,7,8-TCDF	0.23 ND	56	10	6.9	6.9
TCDF, Total	0.23 ND	210	54	26	26
OCDD	9.6 BJ	25000	5000	18000	18000
OCDF	0.74 ND	1700	87	290	290

ND = Results reported below laboratory detection limits.
See Data Quality Assessment Report for qualified data.
Regulatory standards are based on potency.

Table E-6
BASF Riverview, Michigan
Groundwater Samples
Relative Potency of Dioxins
Printed: 1-24-01
Source: Pace Laboratory

URS

Congener	TEF 1997	TEF 1989	SMW-5 Conc. (ng/L)	SMW-5 Toxic Equiv. ('97)	SMW-5 Toxic Equiv. ('89)	SMW-6 Conc. (ng/L)	SMW-6 Toxic Equiv. ('97)	SMW-6 Toxic Equiv. ('89)	SMW-13 Conc. (ng/L)	SMW-13 Toxic Equiv. ('97)	SMW-13 Toxic Equiv. ('89)
2378-TCDD	1	1	0.0078	0.008	0.008	0.007	0.007	0.007	0	0.000	0.000
12378-PeCDD	1	0.5	0	0.000	0.000	0.024	0.024	0.012	0	0.000	0.000
123678-HxCDD	0.1	0.1	0.045	0.005	0.005	0.091	0.009	0.009	0.011	0.001	0.001
123789-HxCDD	0.1	0.1	0.012	0.001	0.001	0.046	0.005	0.005	0.006	0.001	0.001
123478-HxCDD	0.1	0.1	0.0064	0.001	0.001	0.026	0.003	0.003	0	0.000	0.000
1234678HpCDD	0.01	0.01	0.4	0.004	0.004	1.7	0.017	0.017	0.24	0.002	0.002
OCDD	0.0001	0.001	2.1	0.000	0.002	11	0.001	0.011	1.2	0.000	0.001
2378-TCDF	0.1	0.1	0.036	0.004	0.004	0.14	0.014	0.014	0.011	0.001	0.001
12378-PeCDF	0.05	0.05	0.012	0.001	0.001	0.11	0.006	0.006	0.0024	0.000	0.000
23478-PeCDF	0.5	0.5	0.013	0.007	0.007	0.087	0.044	0.044	0.0035	0.002	0.002
123678HxCDF	0.1	0.1	0.0047	0.000	0.000	0.033	0.003	0.003	0.0048	0.000	0.000
123789-HxCDF	0.1	0.1	0	0.000	0.000	0.037	0.004	0.004	0	0.000	0.000
123478-HxCDF	0.1	0.1	0.0073	0.001	0.001	0.16	0.016	0.016	0.0052	0.001	0.001
234678-HxCDF	0.1	0.1	0	0.000	0.000	0.021	0.002	0.002	0	0.000	0.000
1234678-HpCDF	0.01	0.01	0.015	0.000	0.000	0.13	0.001	0.001	0.021	0.000	0.000
1234789-HpCDF	0.01	0.01	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000
OCDF	0.0001	0.001	0.079	0.000	0.000	0.22	0.000	0.000	0.14	0.000	0.000
Sum Toxic Equiv. (in ng/L)				**0.030**	**0.032**		**0.155**	**0.153**		0.008	0.010

Notes: TEF 1997 = Toxic Equivalency Factor published by the World Health Organization in 1997
TEF 1989 = Toxic Equivalency Factor published by EPA in 1989
Bold numbers indicate sum of TEFs exceed residential DCC of 90 ng/Kg.

Table E-6
BASF Riverview, Michigan
Groundwater Samples
Relative Potency of Dioxins
Printed: 1-24-01
Source: Pace Laboratory

Congener	TEF 199	TEF 1989	SMW-20 Conc. (ng/L)	SMW-20 Toxic Equiv. ('97)	SMW-20 Toxic Equiv. ('89)	SMW-10 Conc. (ng/L)	SMW-10 Toxic Equiv. ('97)	SMW-10 Toxic Equiv. ('89)
2378-TCDD	1	1	0	0.000	0.000	0.072	0.072	0.072
12378-PeCDD	1	0.5	0	0.000	0.000	0.19	0.190	0.095
123678-HxCDD	0.1	0.1	1.7	0.170	0.170	1.4	0.140	0.140
123789-HxCDD	0.1	0.1	0.85	0.085	0.085	0.52	0.052	0.052
123478-HxCDD	0.1	0.1	0.56	0.056	0.056	0.16	0.016	0.016
1234678HpCDD	0.01	0.01	29	0.290	0.290	21	0.210	0.210
OCDD	0.0001	0.001	150	0.015	0.150	84	0.008	0.084
2378-TCDF	0.1	0.1	1.7	0.170	0.170	0.33	0.033	0.033
12378-PeCDF	0.05	0.05	1.3	0.065	0.065	0.2	0.010	0.010
23478-PeCDF	0.5	0.5	1.1	0.550	0.550	0.21	0.105	0.105
123678HxCDF	0.1	0.1	0.64	0.064	0.064	0.1	0.010	0.010
123789-HxCDF	0.1	0.1	0	0.000	0.000	0.073	0.007	0.007
123478-HxCDF	0.1	0.1	2.8	0.280	0.280	0.34	0.034	0.034
234678-HxCDF	0.1	0.1	0	0.000	0.000	0.11	0.011	0.011
1234678-HpCDF	0.01	0.01	3.8	0.038	0.038	0.45	0.005	0.005
1234789-HpCDF	0.01	0.01	0	0.000	0.000	0	0.000	0.000
OCDF	0.0001	0.001	2.4	0.000	0.002	0.36	0.000	0.000
Sum Toxic Equiv. (in ng/L)				**1.783**	**1.920**		**0.903**	**0.884**

Appendix F

Data Quality Assessment Report
BASF Corporation
Riverview Project – July/August 2000
Laboratory Project #: I989, I997, J001, J002, J007, J008, J011, J021, J030, J035, J043, J053, J062, J069
Assessment Report Date: January 30, 2001

I. INTRODUCTION

A total of 78 groundwater samples, 51 soil samples, 4 fill samples, 15 concrete samples, and 10 aqueous trip blanks were submitted to Shrader Laboratories Inc., Detroit, Michigan (Shrader) for the analytical parameters listed in Table F-1. Samples were collected from July 26 through August 31, 2000, and were received at the laboratory from July 27 through August 31, 2000. A complete list of samples appears in Table F- 3 in Section III of this report.

Table F-1: Sample ID Summary

Laboratory Project Number	Number of Samples(1)	Matrix	Requested Analyses(2)					
			VOC	SV	PCB	Mets	Wet	Dioxin
I989	4	Fill		X	X	X	X	
I997	3	Soil	X	X	X	X	X	
J001	6	Soil	X	X	X	X	X	
J002	7	Soil	X	X	X	X	X	(3)
J007	2	Soil	X	X	X	X	X	
J008	22	Soil	X	X	X	X	X	(3)
J011	20	Water	X	X	X	X	X	
J021	4	Soil	X	X	X	X	X	
J030	21	Water	X	X	X	X	X	
J035	15	Concrete			X	(4)		
J042	22	Water	X	X	X	X	X	
J053	[illegible]	Water	X	X	X	X	X	
J062	8	Water	X	X	X	X	X	
J069	7	Soil	X	X	X	X	X	

(1) Sample count includes one or more aqueous Trip Blanks accompanying each group of water samples.

(2) **Definitions:** VOC = Volatile Organic Compounds [SW846 Method 8260B]
SV = Semivolatile Organic Compounds [SW846 Method 8270C]
PCB = Polychlorinated Biphenyls [SW846 Method 8082]
Mets = Arsenic (As), Barium (Ba), Cadmium (Cd), Chromium (Cr), Copper (Cu), Lead (Pb), Mercury (Hg), Selenium (Se), Sodium (Na), and Zinc (Zn) for soil and water samples, plus Calcium (Ca) and Magnesium (Mg) for waters only [SW846 Methods 6010B and 7470/71A]
Wet = Chloride [SM18 Method 4500Cl⁻ C], Total Cyanide [SW846 Methods 9010B/9014], Ammonia-Nitrogen [EPA Method 350.1], Sulfate [EPA Method 375.4], and pH [SW846 Method 9040B/9045C] for soil and water samples, plus Sulfide [EPA Method 376.2], Hardness [SM18 Method 2340B], and Chemical Oxygen Demand (COD) [SM18 Method 5220D] for waters only.
Dioxin = Polychlorinated Dibenzo-p-dioxins and Dibenzofurans [SW846 Method 8290]

(3) Dioxin analyses were requested on samples J002007, J008005, J008007, J008023, and J008024 only.

(4) Mercury was the only metal requested for the samples in Project Number J035.

The volatile, semivolatile, and PCB analyses requested were performed by Shrader. The metals and wet chemistry analyses were performed by Jones & Henry Laboratories of Northwood, Ohio, and the dioxin analyses by Pace Analytical Services, Inc., of Minneapolis, Minnesota. The data were submitted in summary format, with supporting QC documentation and selected raw data.

A standard data quality review was performed by URS Corporation (URS) for all analyses contained in these data packages. A standard review does not include reconstruction of the analytical data, but does include assessment of supporting quality control (QC) parameters and a review for compliance with the cited methods. This level of review is considered appropriate for identifying the nature and extent of contamination, but is inadequate to establish the legal defensibility of the data. The sections following discuss findings from the data review procedures performed for each quality control element.

II. DATA QUALITY REVIEW

Data quality review includes evaluation of the following Quality Control (QC) elements:

- Sample preservation and holding times for compliance with method requirements;
- Initial and continuing calibrations for instrument performance;
- Internal standard responses for instrument performance relative to the sample matrix;
- Laboratory method blanks and Trip Blanks for potential contamination;
- Surrogate spike recoveries for extraction/purging efficiency;
- Laboratory Control Samples for method accuracy independent of matrix;
- Matrix Spike/Matrix Spike Duplicates for analytical accuracy and precision relative to the sample matrix;
- Field duplicate results for precision of the entire sampling and analytical system;
- Additional miscellaneous findings or anomalies identified during the review; and
- Overall assessment of data quality.

A. GENERAL COMMENTS

Analyses by specific SW-846 methods were requested for this project. During the Data Assessment, two significant deviations from these methods were noted. These deviations concern the method used for the PCB analyses, and the manner in which detection limits were calculated and reported.

The PCB analyses were requested by SW-846 Method 8082, a gas chromatography (GC) method specifically developed for PCBs. The analyses were actually performed with a gas chromatograph/mass spectrometer (GC/MS) in selective ion monitoring mode, using a modification of SW-846 Method 8270C. Although not considered the method of choice for PCBs (and not recommended by the State of Michigan), Method 8270C is a valid method for PCB analysis. The laboratory's technique combined traditional multiple-peak pattern-recognition for Aroclor identification (similar to Method 8082), with quantitation using the responses of specific characteristic ion masses in relation to an internal standard (as in Method 8270C). Since the instrument performance checks, calibrations, and quantitations were performed as described in Method 8270C, the acceptance criteria of that method, rather than 8082, were used to evaluate the data.

The second significant deviation from SW-846 methodology was in the calculation and reporting of detection limits for the volatiles, semivolatiles, and PCBs. According to SW-846 Method 8000B, the lowest calibration standard of the initial calibration sequence establishes the quantitation limit for the analysis. Extrapolation of the calibration curve below the lowest standard is not permitted, as the responses of the target compounds are rarely linear at the low end of instrument sensitivity. Non-detected compounds should therefore be reported with the corresponding quantitation limit (sometimes referred to as the "reporting limit"), based on the lowest standard, and adjusted for variations in sample weight, volume, percent moisture, or dilution factor. The detection limits reported for the project samples, however, bear no relationship to the calibration level. Rather, the reported detection limit is calculated by the instrument for each individual compound in each separate sample, based on the background noise level and the presence of interferences. As such, the value reported represents the theoretical level of a detectable signal, not necessarily an achievable quantitation limit for a real-world matrix. Consequently, all non-detected results for the volatiles, semivolatiles, and PCBs have been qualified as estimated (UJ), and the limits reported may be significantly lower than actually achievable.

B. SAMPLE PRESERVATION/HOLDING TIMES

All analyses were reviewed for compliance with the required holding time criteria, which are defined in the respective analytical methods. Analyses performed only slightly beyond the required holding time (i.e., within two times the holding time) are qualified as estimated. For analyses performed significantly beyond the required holding time (i.e., greater than two times), positive results are qualified as estimated and non-detect results are rejected.

The analyses for the extractable organics (semivolatiles, PCBs, and dioxins) were performed within the prescribed holding times, with the exception of the semivolatiles for samples J030002, J030004, J042001, J042016, and J042017 (analysis beyond the 40th day after extraction), and the dioxins for samples J002007, J008005, and J008007 (extraction beyond the 30th day after collection). Since the analyses were performed within two times their respective holding times, the results are usable, but were qualified as estimated (J/UJ). In addition, four samples—J021001, J021002, J021003, and J021004—required re-extraction for semivolatiles due to matrix and/or instrument problems. The re-extractions were performed on the 62nd day after collection, significantly past the 14-day holding time. Positive results for these samples were qualified as estimated (J), and non-detects were rejected as unusable (R).

The volatiles fractions of the water samples were not preserved to a pH of 2 after collection, thereby shortening the holding time to 7 days (from 14 days for preserved samples). Virtually all of the water samples were analyzed for volatiles after 7 days, but within 14 days; consequently, the results were qualified as estimated (J/UJ), and may be biased low. One soil sample, J021002, required a reanalysis beyond the 14-day holding time for soils. The results reported for this sample were also qualified as estimated (U/UJ).

A number of the samples in Project Numbers J042, J053, and J062 were analyzed for cyanide after the 14-day holding time, but before the 28th day. These results were qualified as estimated (J/UJ).

C. INSTRUMENT PERFORMANCE CHECKS and CALIBRATIONS

Instrument performance checks of various types are performed periodically to verify proper instrument function. Initial and continuing calibrations are performed to establish or confirm the relationship between concentration and instrument response on a per analyte basis. The instrument performance and calibration criteria are defined in the respective analytical methods.

The GC/MS tuning checks all met the instrument manufacturer's tuning criteria for sensitivity and response. Two samples for semivolatiles and 29 samples for PCBs were analyzed greater than 12 hours after the preceding tuning check. As long as continuing calibration checks, surrogates, and internal standards demonstrated acceptable responses, the results for these samples were not rejected, but were qualified as estimated (J/UJ).

Initial calibration summaries and/or raw data were submitted for review for all parameters, with the exception of the dioxins. The calibrations for the volatiles, semivolatiles, and PCBs met the criteria defined in SW-846 Method 8000 for GC/MS analyses. The metals and wet chemistry calibrations also met the criteria defined in the respective methods.

A number of the volatile and semivolatile continuing calibration checks had percent differences (%Ds) from the initial calibration that exceeded the method criterion of 20%. None, however, exceeded 40%, consequently no qualifications were required. In addition, during the semivolatiles analyses on August 31, 2000, one of the two continuing checks was inadvertently omitted. Consequently, greater than 12 hours elapsed between continuing checks for the five compounds in that standard. Since the standard containing the remaining compounds (including the required Calibration Check Compounds) was analyzed within the 12-hour limit, and exhibited acceptable responses, no qualifications were necessary.

Some inconsistencies were noted in the retention time windows used to quantitate the continuing calibration compounds in the PCB analyses. Discussions with the laboratory indicated that the inconsistencies were unintentional, and due to analyst error. Since insufficient information was provided to determine whether consistent retention time windows were used for the quantitation of sample results, all positive PCB results for all samples were qualified as estimated (J).

According to the narrative provided by Pace Analytical, the closing continuing calibration check associated with the project samples exhibited poor responses for several internal standards. The lab indicated that the problem was confined to the continuing check, and did not affect the sample results. No qualifications were made.

D. BLANKS

Blanks evaluate the existence and magnitude of contamination resulting from field, shipping, or laboratory activities. In the event that an analyte is detected in a blank, contamination of an associated sample is demonstrated if the sample concentration is less than five times the blank concentration (ten times for common lab contaminants: acetone, methylene chloride, 2-butanone, and the phthalate esters). If the concentration in a sample falls within that range, it is attributed to probable contamination rather than actual presence in the environmental sample. The result is, therefore, qualified as non-detect (U) at either the reported concentration or the laboratory Reporting

Limit (RL), whichever is higher. If the sample concentration is above the 5x (or 10x) range, the amount attributable to contamination is negligible and the sample concentration is considered genuine. No qualification is required.

All reported trip blanks and method blanks were free of contamination, with two exceptions. The first was a high concentration (173 mg/Kg) of bis(2-ethylhexyl)phthalate in the semivolatiles method blank extracted on 08/21/00 with samples J00808 through J00822. Most of the samples were non-detect for this compound; however, samples J00810 and J00816 had positive detections less than 10 times the blank. Consequently, the result for sample J00810 was changed from 0.697 mg/Kg to 0.697 U mg/Kg, and that for sample J00816 was changed from 612 mg/Kg to 612 U mg/Kg (non-detects at the values reported).

The second instance of blank contamination was in the dioxin method blank extracted on September 6, 2000. Octachlorodibenzo-p-dioxin (OCDD) was found in the blank at a concentration of 2.4 J ng/Kg. Only one sample, J002007, contained this analyte at a concentration within 5 times the blank, at 9.60 ng/Kg. This result was changed to 9.60 U ng/Kg (non-detect at the value reported). None of the other samples were affected.

E. LABORATORY CONTROL SAMPLES

A Laboratory Control Sample (LCS) is a method blank spiked with known concentrations of all or a representative subset of the analytes of interest. The LCS is subjected to the entire preparation and analytical procedure to evaluate method performance, particularly when the matrix spikes exhibit a matrix effect.

The LCS results for metals, the wet chemistry parameters, and dioxins were all within QC acceptance limits. LCSs were not included with most of the volatile, semivolatile, and PCB batches. It is the laboratory's practice to analyze LCSs only when recovery problems are noted in the matrix spikes. In the two LCSs that were performed for semivolatiles, all recoveries were within limits except for pentachlorophenol in the August 3, 2000 LCS. The pentachlorophenol results in associated samples (Project Numbers I997 and J001) were qualified as estimated (J/UJ) and may be biased low.

F. INTERNAL STANDARDS

Internal standards are used for GC/MS analyses to monitor the stability of the instrument response for every run, and for quantitation of analyte concentrations. Internal standards are compounds added in the same amount to all samples, calibration standards, method blanks, matrix spikes, and LCSs. Analyte quantitation is accomplished by comparing the instrument responses from the target compounds with the responses from the internal standards. This takes into account minor fluctuations in response due to the sample matrix or normal instrument variability.

Each internal standard response should be ≥50%, but ≤200%, of the instrument reference standard, and the retention time should not vary from that of the reference standard by more than 30 seconds. If internal standard responses were <50%, but ≥25% of the reference standard, associated data are qualified as estimated. Non-detect data associated with internal standards having a response <25%

of the reference standard are rejected, and positive concentrations are qualified as estimated. Positive results associated with responses >200% are qualified as estimated (non-detects are not qualified). And finally, for internal standards with retention time (RT) shifts greater than 30 seconds, associated positive results are qualified as estimated, and associated non-detects are rejected (due to the possibility of false negatives).

For the most part, internal standard responses were within the stated criteria for volatiles and semivolatiles. The exceptions are noted here, and are qualified in accordance with the guidelines above (see Tables F-4 and F-5 in Section III for a list of internal standards and their associated target compounds):

Sample	Fraction	Exceedance
J008006	Volatiles	RT shift—IS1, 2, 3
J008019	Volatiles	Low response (>25%)—IS3
J011001	Volatiles	RT shift—IS1, 2, 3
J011019	Volatiles	Low response (>25%)—IS2
J030001	Volatiles	RT shift—IS1, 2, 3
J030003	Volatiles	RT shift—IS2, 3
J030007	Volatiles	RT shift—IS3
J030015	Semivolatiles	High response—IS5
J042020	Volatiles	RT shift—IS2, 3
J042021	Semivolatiles	High response—IS5
J053009	Volatiles	Low response (>25%)—IS 1, 2, 3
J053011	Volatiles	Low response (>25%)—IS3
J053012	Volatiles	Low response (>25%)—IS 1, 2, 3
	"	RT shift—IS 1, 2, 3
J069001	Volatiles	RT shift—IS2, 3

Although the PCB analyses were performed by GC/MS with internal standards, no information regarding the responses or retention times were included in the submitted data packages. As a result, the stability of the instrument response from run to run could not be evaluated.

G. SURROGATE SPIKE RECOVERIES

Surrogates are chemicals not normally found in nature, but chemically behave in a similar fashion to the target analytes. Surrogate spikes are added to every environmental and QC sample, and are used to evaluate extraction and/or purging efficiencies for organic analyses. Surrogate recoveries are evaluated against QC acceptance limits. Recoveries above QC limits indicate a positive bias; therefore, associated positive concentrations are qualified as estimated (J). If recoveries are below QC limits, a negative bias is assumed and associated non-detect and positive concentrations are qualified as estimated (J/UJ). If recoveries are significantly low (i.e., below 10%), positive concentrations are estimated (J) and non-detect results are rejected (R).

Recoveries that were outside of QC acceptance limits are noted here, and were qualified or rejected in accordance with the guidelines above:

Sample	Fraction	Exceedance
I989004	Acid SVOCs	1 surrogate low
I997001	Acid SVOCs	1 surrogate low, 1 <10%
J001008	Acid SVOCs	1 surrogate low
J008017	Acid SVOCs	2 surrogates <10%
J008009	Volatiles	1 surrogate low
J011002	Acid SVOCs	3 surrogates <10%
J011003	Acid SVOCs	3 surrogates <10%
"	PCBs	1 surrogate low
J011004	PCBs	1 surrogate low
J011009	Volatiles	1 surrogate high
J011012	Volatiles	1 surrogate low
J011013	Volatiles	1 surrogate low
J021001	Volatiles	3 surrogates low
"	Acid SVOCs	2 surrogates <10%
J021002	Volatiles	1 surrogate low
J021003	Volatiles	2 surrogates low
J021004	Volatiles	2 surrogates low
J030010	PCBs	1 surrogate low
J030014	Acid SVOCs	1 surrogate low
J030015	Base/Neutral SVOCs	1 surrogate low
J030019	Acid SVOCs	3 surrogates <10%
J035009	PCBs	1 surrogate low
J035010	PCBs	1 surrogate low
J042005	Volatiles	1 surrogate low
J042006	Volatiles	1 surrogate low
J042007	Volatiles	1 surrogate <10%
J042008	Volatiles	1 surrogate low
"	All SVOCs	6 surrogates high
J042013	Base/Neutral SVOCs	2 surrogates high
J042016	Volatiles	1 surrogate high
J042019	Acid SVOCs	1 surrogate high
J053003	Volatiles	1 surrogate low
"	Base/Neutral SVOCs	1 surrogate low
J053004	Volatiles	1 surrogate low
J053009	Volatiles	1 surrogate low
J053016	Base/Neutral SVOCs	1 surrogate low
J053018	Volatiles	1 surrogate low
J069002	PCBs	1 surrogate low
J069003	Acid SVOCs	3 surrogates <10%
"	Base/Neutral SVOCs	1 surrogate low
J069004	Volatiles	1 surrogate low

H. MATRIX SPIKE/MATRIX SPIKE DUPLICATE ANALYSES

Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples are actual environmental samples spiked with known concentrations of target analytes and are performed to evaluate potential matrix effects on the analytical data. Samples submitted for MS/MSD analyses are assigned in the field and are performed for approximately one out of every 20 samples, per matrix, per analytical parameter. For some inorganic analytes (e.g. COD and sulfide), matrix duplicates were performed in lieu of MS/MSDs.

Recoveries and relative percent differences (RPDs) are evaluated against QC acceptance limits. A recovery above QC limits indicates a positive bias; therefore, positive concentrations for that analyte are qualified as estimated (J). If a recovery is below QC limits, a negative bias is assumed, and both non-detect and positive results for that analyte are qualified as estimated (J/UJ). If a recovery is significantly low (i.e., below 10%), positive concentrations are estimated (J) and non-detect results are rejected (R). An RPD above 30% indicates poor precision; consequently positive results are qualified as estimated (J). Due to the absence of LCSs in most organic analytical batches, any qualifications based on the MS/MSD results were applied to all samples in the same Laboratory Project as the spiked sample.

For the most part, MS/MSD recoveries and RPDs were within QC acceptance limits. The exceptions are noted here, and associated samples are qualified in accordance with the guidelines above:

Sample	Analyte	Exceedance	Affected Samples
I989003	Pentachlorophenol	Recoveries low	All I089
J008013	Pentachlorophenol	Recoveries <10%	All J008
J030016	Benzene	Recoveries high	All J030
J062005	p-Chloro-m-phenol	Recovery low, RPD high	All J062
"	Phenol	Recovery low	All J062
J069005	Pentachlorophenol	Recoveries low	All J069
"	Aroclor 1254	Recoveries/RPD high	All J069

I. FIELD DUPLICATE ANALYSES

Field duplicate results are used to evaluate the precision of the sampling and analytical system as a whole. When concentrations for both duplicate samples are greater than five times the quantitation limits, satisfactory precision is indicated by an RPD value less than or equal to 50%. If the concentrations are less than five times the quantitation limit, satisfactory precision is indicated if the field duplicate results agree within 2.5 times the quantitation limit.

Due to unsatisfactory precision (as defined above), the following positive results were qualified as estimated:

Duplicate Pair	Analytes Qualified
J001006 / J001007	All VOCs except benzene and ethylbenzene All SVOCs except naphthalene Aroclor 1254 Cyanide, chromium, lead, mercury, zinc
J008003 / J008004	Isophorone Cyanide and sulfide
J008018 / J008019	Acetone, methylene chloride, vinyl chloride Aroclor 1260 Benzo[a]pyrene, fluorene, fluoranthene, phenanthrene Ammonia, arsenic, cadmium, selenium
J042014 / J042015	Cyanide
J053005 / J053006	Zinc
J053011 / J053012	Acetone, ethylbenzene, xylenes (all) m,p-Cresol, o-cresol
J053016 / J053017	Acetone, tetrachloroethene, toluene Carbazole, m,p- and o-cresol
J062005 / J062006	COD, pH (*the pH on J062006 appears to have been taken on an acid-preserved aliquot*)
J069005 / J069006	All VOCs All SVOCs except acenaphthene and m,p-cresol Arsenic, mercury

J. MISCELLANEOUS FINDINGS

1. Sample I989002 could not be analyzed for chloride, ammonia, or sulfate, due to an insufficient amount of sample.
2. Chloride analyses were not requested for sample group J069.
3. No Chloride, COD, ammonia, sulfate, and pH analyses were not requested for sample J062008.
4. PCB, chloride, COD, cyanide, ammonia, sulfate, and pH analyses were not requested for sample J042020.

K. OVERALL DATA ASSESSMENT

With the exception of rejected data as noted in the findings reported above, acceptable levels of accuracy and precision were demonstrated, and the analytical data are considered acceptable with qualifications for their intended use. The rejected data are summarized in the following table:

Table F-2: Rejected Data Summary

Sample	Parameter	QC Finding
I997001	SVOCs	All non-detected acid compounds were rejected due to a surrogate recovery <10%.
J008006	Volatiles	All non-detects were rejected due to retention time shifts >30 seconds for all three internal standards.
All J008 Samples	SVOCs	Non-detect results for pentachlorophenol were rejected due to recoveries <10% in the associated matrix spikes
J008017	SVOCs	All non-detected acid compounds were rejected due to surrogate recoveries <10%.
J011001	Volatiles	All non-detects were rejected due to retention time shifts >30 seconds for all three internal standards.
J011002	SVOCs	All non-detected acid compounds were rejected due to surrogate recoveries <10%.
J011003	SVOCs	All non-detected acid compounds were rejected due to surrogate recoveries <10%.
J021001	SVOCs	Non-detects were rejected due to gross exceedance of the holding time.
J021001	SVOCs	All non-detected acid compounds were rejected due to surrogate recoveries <10%.
J021002	SVOCs	Non-detects were rejected due to gross exceedance of the holding time.
J021003	SVOCs	Non-detects were rejected due to gross exceedance of the holding time.
J021004	SVOCs	Non-detects were rejected due to gross exceedance of the holding time.
J030001	Volatiles	All non-detects were rejected due to retention time shifts >30 seconds for all three internal standards.
J030003	Volatiles	Non-detects associated with IS2 and IS3 were rejected due to retention time shifts >30 seconds.
J030007	Volatiles	Non-detects associated with IS3 were rejected due to retention time shifts >30 seconds.
J030019	SVOCs	All non-detected acid compounds were rejected due to surrogate recoveries <10%.

Table F-2: Rejected Data Summary

Sample	Parameter	QC Finding
J042007	Volatiles	All non-detected compounds were rejected due to a surrogate recovery <10%.
J042020	Volatiles	Non-detects associated with IS2 and IS3 were rejected due to retention time shifts >30 seconds.
J053012	Volatiles	All non-detects were rejected due to retention time shifts >30 seconds for all three internal standards.
J069001	Volatiles	Non-detects associated with IS2 and IS3 were rejected due to retention time shifts >30 seconds.
J069003	SVOCs	All non-detected acid compounds were rejected due to surrogate recoveries <10%.

III. ADDITIONAL TABLES

Table F-3: Sample ID Cross-reference

Laboratory ID	Sample ID	QC Type	Matrix	Date Collected
I989001	SB-01 13.5-19.5'		Fill	7/26/00
I989002	SB-02 24.5-25.0'		Fill	7/26/00
I989003	SB-09 03.5-08.5'		Fill	7/26/00
I989004	SB-10 16.0-16.5'		Fill	7/26/00
I997001	DMW-09 02-04'		Soil	7/27/00
I997002	DMW-09 06-08'		Soil	7/27/00
I997003	DMW-09 10-12'		Soil	7/27/00
J001001	DMW-10 02-04'		Soil	7/31/00
J001002	DMW-10 08-10'		Soil	7/31/00
J001003	DMW-10 10-12'		Soil	7/31/00
J001006	DMW-11 04-06'		Soil	7/31/00
J001007	DMW-110 04-06'	FD	Soil	7/31/00
J001008	DMW-11 06-08'		Soil	7/31/00
J002001	DMW-13 04-06'		Soil	7/31/00
J002002	DMW-13 06-08'		Soil	7/31/00
J002003	DMW-13 10-12'		Soil	7/31/00
J002004	DMW-12 06-08'		Soil	8/1/00
J002005	DMW-12 10-12'		Soil	8/1/00
J002006	DMW-12 18-20'		Soil	8/1/00
J002007	DMW-12 04-06'		Soil	8/1/00
J007001	DMW-09 26-28'		Soil	8/2/00
J007002	DMW-10 24-26'		Soil	8/2/00
J008001	DMW-11 24-26'		Soil	8/3/00
J008002	DMW-13 26-28'		Soil	8/3/00
J008003	DMW-120 28-30'	FD	Soil	8/3/00
J008004	DMW-12 28-30'		Soil	8/3/00
J008005	IMW-13 04-06'		Soil	8/3/00
J008006	SMW-04 10-12'		Soil	8/4/00
J008007	SMW-04 04-06'		Soil	8/4/00
J008008	SMW-15 04-06'		Soil	8/7/00
J008009	SMW-14 06-08'		Soil	8/7/00
J008010	IMW-01 02-04'		Soil	8/7/00
J008011	IMW-01 06-08'		Soil	8/7/00
J008012	SMW-21 02-04'		Soil	8/7/00
J008013	SMW-22 04-06'		Soil	8/7/00
J008016	SMW-20 04-06'		Soil	8/7/00
J008017	IMW-06 02-04'		Soil	8/8/00
J008018	IMW-06 06-08'		Soil	8/8/00
J008019	IMW-060 06-08'	FD	Soil	8/8/00
J008020	SMW-23 04-06'		Soil	8/8/00
J008021	IMW-05 04-06'		Soil	8/8/00
J008022	IMW-05 02-04'		Soil	8/8/00
J008023	IMW-06 0-02'		Soil	8/8/00
J008024	IMW-05 0-02'		Soil	8/8/00

Table F-3: Sample ID Cross-reference

Laboratory ID	Sample ID	QC Type	Matrix	Date Collected
J011001	SMW-08		Water	8/4/00
J011002	SMW-07		Water	8/4/00
J011003	SMW-04-99		Water	8/4/00
J011004	SMW-05-99		Water	8/7/00
J011005	SMW-06-99		Water	8/7/00
J011006	SMW-08		Water	8/7/00
J011007	MW-G		Water	8/7/00
J011008	Trip Blank	TB	Water	8/7/00
J011009	SB-02		Water	8/8/00
J011010	SMW-02		Water	8/8/00
J011011	SB-01		Water	8/8/00
J011012	MW-D		Water	8/8/00
J011013	MW-D0	FD	Water	8/8/00
J011014	Trip Blank	TB	Water	8/8/00
J011015	SB-03		Water	8/9/00
J011016	DMW-02		Water	8/9/00
J011017	MW-E		Water	8/9/00
J011018	DMW-06		Water	8/9/00
J011019	DMW-05		Water	8/9/00
J011020	Trip Blank	TB	Water	8/9/00
J021001	SMW-16 00-02'		Soil	8/9/00
J021002	SMW-17 00-02'		Soil	8/9/00
J021003	SMW-18 00-02'		Soil	8/9/00
J021004	SMW-19 00-02'		Soil	8/9/00
J030001	PZ-06		Water	8/10/00
J030002	PZ-04		Water	8/10/00
J030003	PZ-05		Water	8/10/00
J030004	MW-B		Water	8/10/00
J030005	MW-C		Water	8/10/00
J030006	PZ-01		Water	8/10/00
J030007	Trip Blank	TB	Water	8/10/00
J030008	PZ-05		Water	8/11/00
J030009	DMW-01		Water	8/11/00
J030010	SMW-03		Water	8/14/00
J030011	PZ-02		Water	8/11/00
J030012	PZ-03		Water	8/11/00
J030013	MW-A		Water	8/11/00
J030014	DMW-04		Water	8/14/00
J030015	MW-K		Water	8/14/00
J030017	Trip Blank	TB	Water	8/14/00
J030018	SMW-01		Water	8/15/00
J030019	DMW-03		Water	8/15/00
J030020	MW-H		Water	8/15/00
J030021	MW-I		Water	8/15/00
J030022	Trip Blank	TB	Water	8/15/00
J035001	RR-1 Top		Concrete	8/14/00

Table F-3: Sample ID Cross-reference

Laboratory ID	Sample ID	QC Type	Matrix	Date Collected
J053011	SMW-26		Water	8/23/00
J053012	SMW-260	FD	Water	8/23/00
J053013	SMW-27		Water	8/23/00
J053014	SMW-24		Water	8/23/00
J053015	SMW-25		Water	8/23/00
J053016	SMW-040	FD	Water	8/23/00
J053017	SMW-04		Water	8/23/00
J053018	SMW-13		Water	8/23/00
J053019	DMW-10		Water	8/23/00
J053020	Trip Blank	TB	Water	8/23/00
J062001	DMW-11		Water	8/24/00
J062002	DMW-13		Water	8/24/00
J062003	BMW-01		Water	8/25/00
J062004	Trip Blank	TB	Water	8/25/00
J062005	DMW-09		Water	8/28/00
J062006	DMW-090	FD	Water	8/28/00
J062007	Trip Blank	TB	Water	8/29/00
J062008	DMW-12		Water	8/29/00
J069001	TP-5 Comp		Soil	8/30/00
J069002	TP-2 Comp		Soil	8/30/00
J069003	TP-6 Comp		Soil	8/31/00
J069004	TP-4 Comp		Soil	8/31/00
J069005	TP-3 Comp		Soil	8/31/00
J069006	TP-30 Comp	FD	Soil	8/31/00
J069007	TP-1 Comp		Soil	8/31/00

FD = Field Duplicate
TB = Trip Blank

Table F- 4: Volatile Internal Standards

IS-1 Fluorobenzene	IS-2 Chlorobenzene-d5	IS-3 1,4-Dichlorobenzene-d4
Acetone	Chlorobenzene	1,2-Dichlorobenzene
Benzene	Ethylbenzene	1,4-Dichlorobenzene
1,2-Dichloroethane	Styrene	
1,1-Dichloroethene	Tetrachloroethene	
1,2-Dichloropropane	Toluene	
Methylene Chloride	m,p-Xylenes	
2-Butanone (MEK)	o-Xylene	
Trichloroethene		
Vinyl Chloride		

Table F- 5: Semivolatile Internal Standards

IS-1 Dichlorobenzene-d4	IS-2 Naphthalene-d8	IS-3 Acenaphthene-d10
2-Chlorophenol	p-Chloro-m-cresol	2,4,6-Trichlorophenol
o-Cresol	2,4-Dichlorophenol	Acenaphthene
m,p-Cresols	2,4-Dimethylphenol	Carbazole
Phenol	Hexachlorobutadiene	Dibenzofuran
Aniline	Isophorone	Fluorene
Hexachloroethane	Naphthalene	1,2,4,5-Tetrachlorobenzene
	1,2,4-Trichlorobenzene	
IS-4 Phenanthrene-d10	**IS-5 Chrysene-d12**	**IS-6 Perylene-d12**
Pentachlorophenol	bis(2-Ethylhexyl)phthalate	Benzo[a]pyrene
Di-n-butylphthalate		
Fluoranthene		
Phenanthrene		

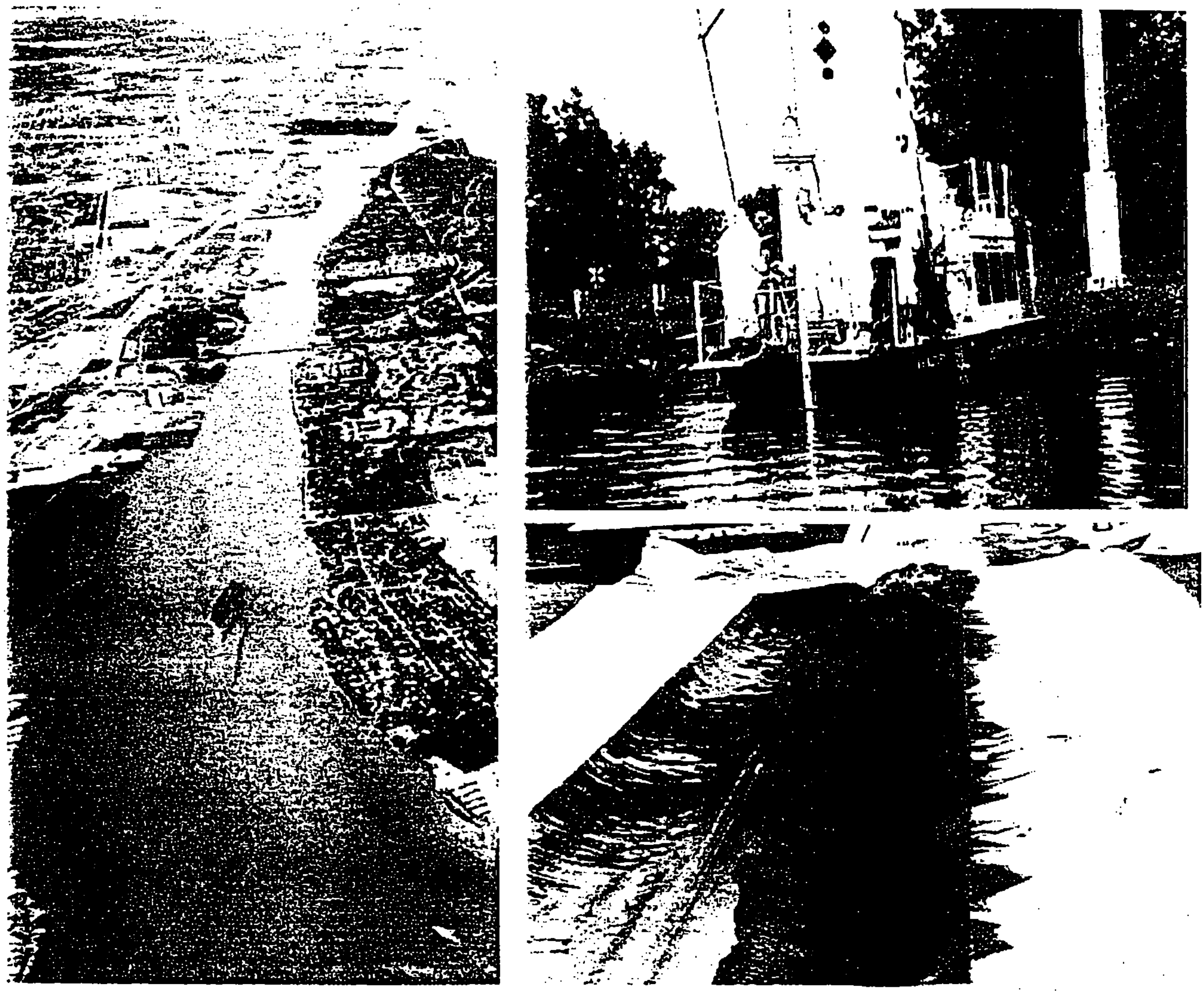
Firestone-Riverview-Monguagon Creek Data 2000 core ID depth

X Y Z @@Hg Core_ID Top
-1
52 X 1 Y 2 Hg

734422.46	184978.103	0.15	13	00fs03-00-30	-3.0226
734422.46	184978.103	0.6	13	00fs03-30-90	-3.0226
734422.46	184978.103	1.2	2.4	00fs03-90-150	-3.0226
734422.46	184978.103	1.766	2.2	00fs03-150-203	-3.0226
734459.408	185021.76	0.15	1.9	00fs02-00-30	-4.9784
734459.408	185021.76	0.6	2.4	00fs02-30-90	-4.9784
734459.408	185021.76	1.01	1.5	00fs02-90-112	-4.9784
734409.333	184918.402	0.15	2.5	00fs04-00-30	-7.9756
734409.333	184918.402	0.56	1.3	00fs04-30-81	-7.9756
734349.567	184848.973	0.15	0	00fs05-try1	-5.3086
734344.407	184850.835	0.15	0	00fs05_try2	-3.6576
734347.11	184832.039	0.15	0.06	00fs05-00-30	-6.7056
734347.11	184832.039	0.45	0	00fs05-30-61	-6.7056
734136.366	184457.885	0.15	24	00rv12-00-30	-3.6576
734136.366	184457.885	0.6	19	00rv12-30-90	-3.6576
734136.366	184457.885	1.22	6.8	00rv12-90-154	-3.6576
734165.738	184513.876	0.15	1.3	00rv11-00-30	-2.5146
734165.738	184513.876	0.6	4.1	00rv11-30-90	-2.5146
734165.738	184513.876	1.2	4.3	00rv11-90-150	-2.5146
734165.738	184513.876	2.18	25	00rv11-150-287	-2.5146
734458.687	185043.031	0.15	8.8	00fs01-00-30	-0.9398
734458.687	185043.031	0.6	16	00fs01-30-90	-0.9398
734458.687	185043.031	1.2	9.6	00fs01-90-150	-0.9398
734458.687	185043.031	2.09	1.9	00fs01-150-266	-0.9398
734273.346	184659.364	0.15	0	00rv07	-5.7404
734238.909	184635.051	0.15	3.5	00rv08-00-30	-1.3462
734238.909	184635.051	0.6	1.8	00rv08-30-90	-1.3462
734238.909	184635.051	1.2	35	00rv08-90-150	-1.3462
734238.909	184635.051	2.07	3.4	00rv08-150-264	-1.3462
734010.492	184082.535	0.15	1	00mc18-00-30	-1.905
734010.492	184082.535	0.6	3.5	00mc18-30-90	-1.905
734010.492	184082.535	1.2	2.8	00mc18-90-150	-1.905
734010.492	184082.535	1.8	7.6	00mc18-150-210	-1.905
734010.492	184082.535	2.42	11	00mc18-210-274	-1.905
734023.725	184143.35	0.15	8.4	00mc17-00-30	-1.0414
734023.725	184143.35	0.6	11.6	00mc17-30-90	-1.0414
734023.725	184143.35	1.2	0.77	00mc17-90-150	-1.0414
734023.725	184143.35	1.8	1.5	00mc17-150-210	-1.0414
734023.725	184143.35	2.46	2.6	00mc17-210-281	-1.0414
734046.008	184180.954	0.15	4.3	00mc16-00-30	-4.953
734046.008	184180.954	0.6	18	00mc16-30-90	-4.953
734046.008	184180.954	1.2	10.6	00mc16-90-150	-4.953
734046.008	184180.954	1.8	6.8	00mc16-150-210	-4.953
734046.008	184180.954	2.33	6.2	00mc16-210-256	-4.953
734057.477	184253.19	0.15	6.3	00mc15-00-30	-7.0104
734057.477	184253.19	0.6	6.6	00mc15-30-90	-7.0104
734057.477	184253.19	1.01	0.38	00mc15-90-111	-7.0104
734088.038	184367.736	0.15	3.7	00mc14-00-30	-2.7432
734088.038	184367.736	0.6	4.2	00mc14-30-90	-2.7432
734088.038	184367.736	1.12	0	00mc14-90-134	-2.7432
734056.637	184387.969	0.15	2.6	00mc13-00-30	-1.9304
734056.637	184387.969	0.66	4.1	00mc13-30-101	-1.9304

MI/DEQ/SWQ-97/084

Results of the Trenton Channel Project Sediment Surveys 1993-1996



July 1997

Arthur Ostaszewski
Michigan Department of Environmental Quality
Surface Water Quality Division

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Table of Contents

ABSTRACT

The Trenton Channel of the Detroit River has been identified in several studies as containing contaminated sediments that impair beneficial uses. From 1993 to 1996, the MDEQ and USEPA surveyed depositional areas of the Trenton Channel to determine horizontal and vertical distribution of contaminated sediments. Using the Rossfelder coring unit of the USEPA-GLNPO R/V Mudpuppy along with ponar and eckman dredges, 84 stations were sampled. Results show that 6 major areas harbor the bulk of contamination, an estimated 483,000 cubic yards. They are: Allied Fuel Oil Slip, Nicholson South Slip, Firestone Steel Area, Black Lagoon, Elizabeth Park North Canal, and Elizabeth Park South Canal-Inlet. Mercury, PCBs, PAHs, Heavy Metals, and Oil and Grease are the primary parameters of concern. Contamination is concentrated on the Michigan mainland side in depositional pockets primarily of fine sand and silt.

METHODS

Using the USEPA-GLNPO Research Vessel (R/V) Mudpuppy, 4 inch diameter sediment cores were taken using a Rossfelder Vibracoring Unit in depositional areas encompassing the entire portion of the Trenton Channel over a 3 year period, 1993-1996, (Figure 2, Map of Sample Areas). Cores were taken to refusal. MDEQ-SWQD also collected surfical petite ponar and eckman sediment samples in certain locations inaccessible to the 32' R/V Mudpuppy. Data from Michigan State University (Besser et. al., 1996) was also used. Depositional zones were determined by reviewing historical outfall and sampling records, and presurvey reconnaissance of soft sediments (fine sand and silt) using a petite ponar dredge and/or 12 ft. PVC poles.

To address trends in surficial depositing sediments, Michigan State University (Besser et.al., 1996), collected ponar sediment samples in a dredged portion of the Channel that included clean and contaminated reference sites. In 1994 and 1996, ponar and eckman dredge samples were taken at the same reference depositional sites by MDEQ to better characterize the trend contaminant levels in undisturbed surficial sediments.

The primary suite of parameters measured for all surveys included heavy metals, PCBs and PAHs. Depending on specific survey objectives (Figure 1. Chronology), analysis for TOC, Oil and Grease, Grain-size, Acid Volatile Sulfides-Simultaneously Extractable Metals, Density, Pesticides, Base Neutral Scans, and Mass Spec-Library Searches (Appendix A. Mass Spec-Library Search Interpretations) were also conducted. All lab analyses used standard USEPA methodology or ASTM protocol as identified in the Trenton Channel Sediment Assessment Quality Assurance Project Plan, (Ostaszewski and Benzie, 1993).

For comparing the results to established levels of high contamination to aquatic life, the Effects Range Median Guidelines (ERM - Long and Morgan, 1990), as outlined in the USEPA Sediment Classification Methods Compendium (USEPA, 1992) were used. For those parameters without established ERMs, results were compared to the Ontario Ministry of the Environments Severe Effect Levels (SEL - Persaud, 1993). For the bioaccumulative parameters PCBs and Mercury, we compared results to the quantification limit (QL) as outlined by the MDEQ-Environmental Response Division Target Method Detection Limit using respective EPA Analytical methods, (Table A. Parameters and Guidelines Used to Evaluate Trenton Channel Project Sediment Results). The magnitude of exceedances for bioaccumulatives (QL) and toxics (ERM/SEL) were summed and used in identifying those sites which were the most contaminated (Table B. Classification of Contaminated Sediment Sites as applied to the Trenton Channel Project Sediment Survey Results (1993-1996)), (Graph B (a). Classification and Distribution of Trenton Channel Project Sediment Results (annotated)). Dredging volumes for "extremely" contaminated areas where estimated taking the surface area of the depositional site, and depth of QL and/or ERM/SEL exceedances. Where QL and ERM/SELs were still exceeded at bottom intervals, professional judgment was used to determine depth of contamination (rate of decline). The volumes are based on in place measurements, and do not take into account percent solids.

The pattern of contamination in the upstream portion of the upper Trenton Channel appears to be highest at the most upstream stations and decreases downstream. The contamination is also much greater for those stations along the Michigan shoreline. Allied and Nicholson Slips have the highest levels of most contaminants. Core samples at these two freighter slips show the vertical distribution of all contaminants to be variable with no discernible pattern. Contamination was present down to the bottom of the core, 218 cm.

Downstream at the Stenson Site, levels of Cd, Cr, Fe, Mn, Ni, Zn, PCBs and Oil and Grease are highest on the surface, and decrease down through the sediments. This is very clear with PCBs at the Stenson site. PCB levels on the surface (0-30cm) were at 7.2 ppm and decrease to 7.0 ppm (30-91cm), 5.6 ppm (91-152cm), 1.3 ppm (152-213cm) and 1.5 ppm (213-224cm). PCBs were also lower with depth at the Nicholson Slip Site.

Levels of Cu, Hg and PAHs showed an increase with depth to 213cm at the Stenson site, then decreased at the 213-224 cm interval. Just offshore at the three Mud Island CDF sample sites, contaminants were much lower. ERM/SEL guidelines were exceeded only for organic contaminants. The highest level around the CDF for PCBs was 1.6 ppm. Oil and Grease (2760 ppm) and PAHs (48 ppm) were highest for the west side of the island (nearest the mainland) than on the east side (Oil and Grease=1200ppm, PAHs=18.6 ppm).

Upper Trenton-Grassy Island to Pt. Hennepin

Figure 6. Upper Trenton Channel Grassy Island to Pt. Hennepin

There are few depositional zones in the area downstream from Ecorse Creek to the Grosse Ile Toll Bridge. Areas sampled in this stretch included five samples around Grassy Island (another former CDF), off the southern tip of BASF Northworks, in a boat slip of the Wyandotte Yacht Club, in the shallow region between Grassy Island and Pt. Hennepin, and off the west side of Fighting Island (also a former CDF).

Heavy Metals exceeded QL and ERM/SEL levels only at the BASF-Lower and/or Wyandotte Yacht Club sites. The highest values are presented below:

BASF-Lower/Wyandotte Yacht Club Maximum Values
Metals (ppm-dw)
Hg=1.5 Ni=67 Pb=150 Zn=330

Organics (ppm-dw)
PCBs=3.3 PAHs=88.7 Oil and Grease=11,000

Figure 7. PCBs in the Upper Trenton Channel
Figure 8. Hg in the Upper Trenton Channel

Levels of Cd, Cr, Cu, Fe and Mn did not exceed ERM/SEL levels as did sites upstream. Heavy metals were relatively low for the sites around Grassy Island and the one site off Fighting Island. PCBs continued to be elevated above QL levels, are greater at nearshore stations, and increase with depth,. At the BASF-Lower site, PCB concentrations ranged from 1.93 ppm near the surface (0-30 cm), 1.3 (30-91cm), 0.42 ppm (91-152cm), and non-detected at lower depths (152-213cm) and (213-218cm) in the core.

Immediately downstream of Firestone Steel is the Federal Marine Terminal (BASF Landfill) Site. Sediments off this site had levels similar to the Firestone Steel site, with elevated levels of Cd (40 ppm), Cr (500 ppm), Fe (45,000 ppm), Hg (9.9 ppm), Ni (210 ppm), Pb (352 ppm), Zn (846 ppm), PCBs (11.2 ppm), and Oil and Grease (41,200 ppm).

Federal Marine Terminal (a.k.a. Monguagon Creek-Upstream) Site Maximums
Metals (ppm-dw)
Cd=40 Cr=500 Fe=45,000 Hg=9.9 Ni=210 Pb=352 Zn=846

Organics (ppm-dw)
PCBs=11.2 Oil and Grease=41,200

Figure 14. Federal Marine Terminal / Monguagon Creek Area Cd levels
Figure 15. Federal Marine Terminal / Monguagon Creek Area Hg levels

With the exception of cadmium, the highest levels of contaminants were found below the surface at the Federal Marine Terminal site, though surfical sediments still exceeded QL and ERM/SEL levels. Cadmium at this site was the highest of the survey (40 ppm) and located in the surface core interval (0-30cm).

Middle Trenton Channel - Monguagon Creek/Gross Ile Toll Bridge to Elizabeth Park-North
Figure 16. Middle Trenton Channel: Monguagon Creek to Elizabeth Park North Canal

There are 2 sediment depositional areas in the Middle Trenton Channel. Immediately downstream of the Grosse Ile Toll Bridge at the mouth of Monguagon Creek, sediments showed similar patterns of contamination as the Federal Marine Terminal Site, with QL and ERM/SEL levels exceeded for Cd (30 ppm), Cr (456 ppm), Fe (57,000), Hg, (3.9 ppm), Ni (251 ppm), Pb (424 ppm), Zn (1200 ppm), and PCBs (12.3 ppm). The mouth of Monguagon Creek showed high levels of PAHs (218 ppm) and Oil and Grease (9000 ppm).

Monguagon Creek Area Maximums
Metals (ppm-dw)
Cd=30 Cr=456 Fe=57,000 Hg=3.9 Ni=251 Pb=424 Zn=1200

Organics (ppm-dw)
PCBs=12.3 PAHs=218 Oil and Grease=9000

Figure 17. Pb in the Federal Marine Terminal / Monguagon Creek Area.
Figure 18. Zn in the Federal Marine Terminal / Monguagon Creek Area

One small depositional pocket along the Grosse Ile shoreline, downstream and across from Monguagon Creek, did not exceed any ERM/SEL levels for heavy metals. Only PCBs (0.6 ppm) exceeded QL levels.

Lower Trenton Channel: Elizabeth Park North to Celeron Island

Figure 23. Lower Trenton Channel: Elizabeth Park North Canal to Celeron Island

Downstream of the Trenton Towers, homes, marinas, and boat launches dot the mainland shoreline until the beginning of Elizabeth Park. Elizabeth Park is a 500 acre municipal park administered by the Wayne County Parks Department. It is actually an island, with a canal running the length of it. At the north end of the park a depositional zone known as Elizabeth Park-North Canal is located. Elizabeth Park-North Canal is bound by a Mobil Oil Terminal to the north, and the park itself on the South. The Trenton Channel flows to the east, and the canal constricts to pass around the island on the west.

Just upstream of the Mobil Oil Terminal, sediments were sampled in a small cove. Only Zn (683 ppm) exceeded ERM levels. No other metals or organics exceeded QL or ERM/ SEL levels. In Elizabeth Park-North Canal, Cd (15 ppm), Cr (270 ppm), Fe (48700 ppm), Hg (7.4 ppm), Ni (100 ppm), Pb (279 ppm), and Zn (842 ppm) exceeded ERM/SEL levels. Organics also exceed QL and ERM/SEL levels for PCBs (10.3 ppm), PAHs (57 ppm), and Oil and Grease (26,200 ppm).

Elizabeth Park-North Canal (EPNC) Maximums
Metals (ppm-dw)

Cd=15	Cr=270	Fe=48,700	Hg=7.4	Ni=100	Pb=279	Zn=842

Organics (ppm-dw)

PCBs=10.3	PAHs=57	Oil and Grease=26,200

Figure 24. EPNC Hg levels
Figure 25. EPNC PCB levels
Figure 26. EPNC PAH levels

With the exception of PAHs, levels of contamination were highest on the surface. Other contaminants decreased with depth down to 330 cm. At the eastern end of the Elizabeth Park-North Canal depositional zone, contaminants exceeded ERM levels for only Pb (129 ppm) and Zn (795 ppm), with no exceedances for organics.

Continuing along the canal, there are 5 small public bridges which cross its upper half. These bridges attach the park to the mainland. Surficial sediments were collected behind each bridge. Exceedances of QL and ERM/SEL levels are outlined as follows:

Bridge (Upstream to Downstream)
All values above ERM/SEL (ppm d.w.)

EPC-1						Pb=129	Zn=795	
EPC-2 no exceedances								
EPC-3				Hg=1.7		Pb=137	Zn=750	
EPC-4		Cr=146	Fe=43,000		Ni=75	Pb=189	Zn=870	PCBs=5.5
EPC-5	Cd=9.9		Fe=43,000			Pb=187	Zn=1020	PCBs=0.8

Downstream of EPC-2, there is an increase in contamination in the sediments. PCBs are found in the canal only below the area where dredge spoils from the Elizabeth Park Marina excavation were land deposited (EPC-4, Bridge 4).

Horizontally, contaminant distribution in Black Lagoon is bound on the north, west and south by the shoreline. To the east of Black Lagoon, a shoal runs the length of the depositional zone with the effect of creating a quasi-breakwall. Levels of contamination along the shoal did not exceed any QL or ERM/SEL for either metals or organics. The shoreline and the shoal effectively bound the contaminated area of Black Lagoon.

Vertically, contamination varied within Black Lagoon. Sample sites located deeper in the lagoon generally had the greatest level of contaminants buried at depths from 30 to 210 cm. Samples in the south region had higher contamination on the surface. Below 210cm, contaminant levels did not exceed QL or ERM/SEL levels except for Hg (1.4 ppm) and Oil and Grease (2970 ppm). The estimated volume of contaminated sediments in Black Lagoon is 20,000 cu. yards.

Downstream of Black Lagoon, the next major depositional area is Elizabeth Park North Canal. Elizabeth Park North Canal is a contaminated depositional zone bound by the shoreline to the north, east and south. Deposition is bound to the east by the flow velocity and scour of the Trenton Channel. Contamination was primarily greatest on the surface at this site, though extended below 330 cm. Surficial samples from 1996 were generally less contaminated than surficial core samples collected in 1993 and 1994 at Elizabeth Park North Canal. Highest PAHs levels (57 ppm) were found buried in cores.

At Elizabeth Park Marina, 3 years of surficial sediment sampling show depositional rates in the lower Trenton to be on the order 1-3 cm/yr. (Kreis, 1996). Surficial contaminant levels have declined but still exceeded QL and ERM/SEL levels for Fe, Hg, Ni. Pb, and Zn in the Marina.

Below Elizabeth Park Marina and the Grosse Ile "Free" Bridge, the Trenton Channel begins to widen and velocities decrease. Several islands dot this area as it opens up to Lake Erie. Wind and waves play a predominant role in moving the sediments. Sand predominates in this region in contrast to silt in upstream sheltered areas. The Lower Trenton is a dynamic area with waves reaching much higher peak heights than upstream. It is also more prevalent to partial reverse flow seiche effects from Lake Erie that happen with sustained east winds (Quinn, 1976).

At Celeron Island, Pb was found highest on the surface. Also, Hg and PAHs were found only on the surface interval of sediment cores and not detected below the surface. Resuspension of upstream contaminants are one of the mechanisms of how contaminants relocate to the Western Basin of Lake Erie (Schloesser, 1995).

Conclusions-

In two separate prioritization rankings of contaminated sediment sites in the Trenton Channel and Detroit River, the Firestone/Monguagon/McLouth area, along with Black Lagoon and Elizabeth Park North Canal ranked "Severely Contaminated" (Kreis, 1989) and "Severely Contaminated and Impacted" (Farara and Burt, 1993). These areas had exhibited degraded bethos, high toxicity, and exceed highly polluted sediment guidelines. These and other previous sediment sites studied compare well to Trenton Channel Project sediment results. (Table C. Known contaminated sites identified in the Trenton Channel with Comparisons to 1993-1996 Sampling Results).

The results of the Trenton Channel Project sediments sampling 1993-1996 has led to the conclusion that six major depositional areas are extremely contaminated in the Trenton Channel. Several minor areas are also extremely contaminated. Due to current velocity and navigational channel morphology, these depositional zones are horizontally defined in the Trenton Channel. Core sampling and/or hydroacoustic profiling (Caulfield, 1995) has determined the depth of contamination in these zones.

DISCUSSION

As identified in the 1985 Upper Great Lakes Connecting Channel Studies (U.S. EPA, 1988), sediment contamination in the Trenton continues to show a distinct gradient across the channel. Contamination is primarily present only along the Michigan mainland shore where depositional areas exist. The Allied Fuel Oil Slip and Nicholson South Slip mark the beginning of sediment contamination in the Trenton Channel. Levels in these two areas are much higher than those in immediate depositional zones downstream. Organic contaminants PCBs and Oil and Grease show a distinct decreasing trend of contamination from upstream (Allied/Nicholson) down to Wyandotte Yacht Club (3.5 miles).

Downstream of the Ecorse Creek mouth and out from shore lies the closed CDF (now a National Wildlife Refuge), Grassy Island. The contaminants Hg, PAHs and O&G are elevated at the south end of Grassy Island compared to north and west island sites. The closed CDF is currently the subject of study, (Manny, 1997).

There is no major depositional area along the Michigan Mainland shore from the Wyandotte Yacht Club to the site of the former Firestone Steel, now operating as the warehouse of Materials Processing Corp (MPC), a distance of 2.5 miles. A substantial increase in contamination begins at Firestone Steel and continues downstream to Monguagon Creek. The Firestone Steel Area is a large depositional area of heavy metals, PCBs, Hg, and Oil and Grease. Highest concentrations are found primarily on the surface, suggesting recent or continuing sources. The depositional area continuing downstream of Firestone Steel shows extreme contamination though less elevated, with the highest contamination found primarily below the surface, though surficial concentrations also exceeding QL and ERM/SEL levels.

Cadmium levels were generally low upstream of Firestone Steel (non-detect to 13 ppm). Just downstream of Firestone Steel at the Federal Marine Terminal station, levels increase to 40 ppm and were found highest on the surface. Cadmium levels continue to be predominantly higher on the surface and decrease downstream from the Federal Marine Terminal Area to Lake Erie.

The distribution of contaminants (2-4 DTP) from Monguagon Creek to the Lower Trenton Channel and Lake Erie has been well documented (Carter and Hites, 1992). In Trenton Channel Project sediments surveys, the mouth of Monguagon Creek had increased levels of PAHs and Oil and Grease compared to surrounding sites. Monguagon Creek is now in the process of remediation (Conestoga, 1996). This action will prevent Monguagon Creek from further being a primary source of PAHs and Oil and Grease to the sediments of the Lower Trenton Channel. The size of the large contaminated zone in the middle Trenton extends from Firestone Steel to the Upper McLouth Property, encompassing the Federal Marine Terminal site and mouth of Monguagon Creek.

The swift laminar current in the Trenton Channel has kept sediment contamination in a tight lens along the Michigan mainland and has also kept it from crossing over to the Grosse Ile side. Transect sediment core sampling (3 stations-nearshore, midshore, offshore) across from the upper property area of McLouth Steel shows the contamination to be in a band extending from the mainland to the west bank of the navigation channel, basically hugging the shore. The highest contaminant levels in this area downstream of Monguagon creek are found now in a lens hugging the mainland shore with the greatest concentrations below surficial layered sediments.

Downstream of Monguagon Creek, the next area of contamination is below the former McLouth Steel-Trenton facility, the depositional area known as Black Lagoon. Our sediment surveys have determined that contamination in Black Lagoon is bound by the shoreline and a shoal area. Depth of contamination extends to approximately 230cm, where clean native clays are found. The surficial sediments of Black Lagoon have been surveyed for over 10 years. Contamination on the surface has decreased, though still above ERM/SEL levels. The cause of this decrease is most likely due to resuspension of sediments and subsequent redeposition of new material (thus dilution).

With assessment complete, the focus of the Trenton Channel Project now shifts towards remediation. The next steps include examining remedial options for the six zones of the Trenton Channel determined to be extremely contaminated. With the Sediment Treatability Study nearing completion (Snell Environmental and MDEQ-SWQD, 1996), the feasibility of applying treatment technologies will be investigated alongside more conventional disposal techniques.

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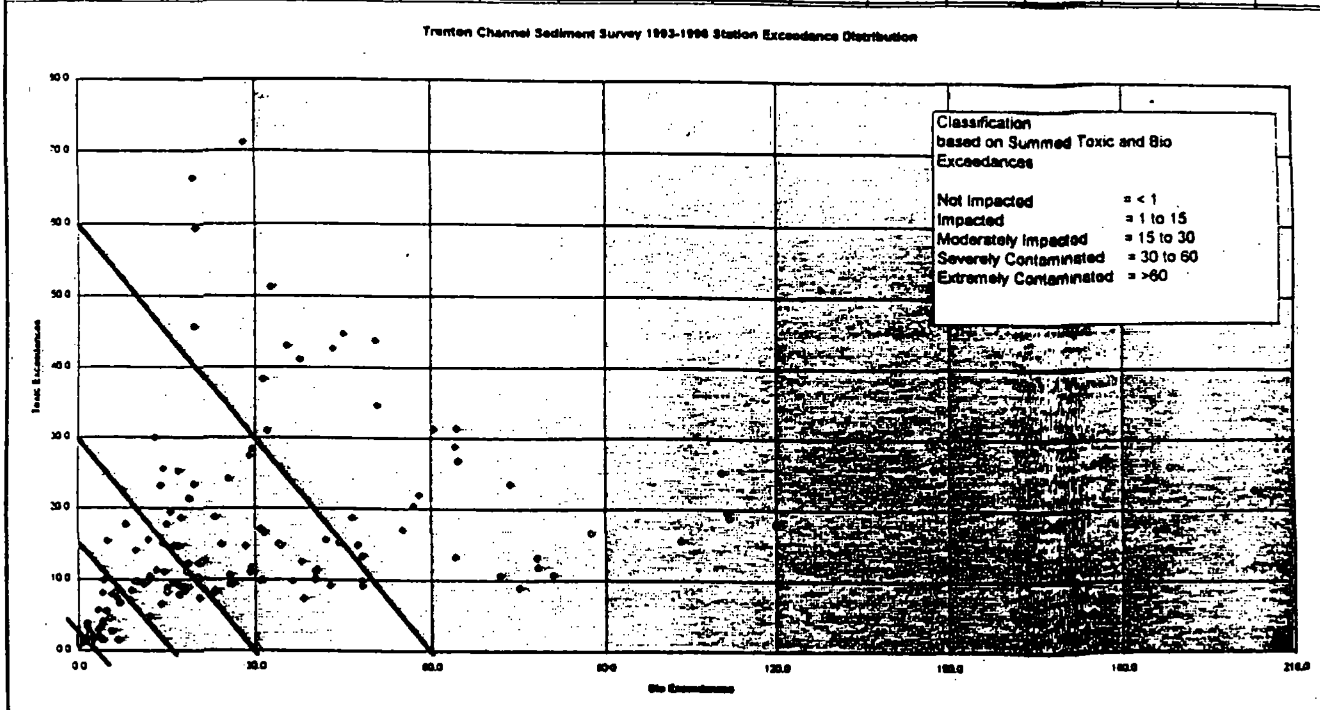
TABLE A. Parameters and Guideline Levels Used to Evaluate Trenton Channel Project Sediment Results.

Bioaccumulative Parameters	Symbol	QL (ppm d.w.)	Note
Mercury	Hg	0.1	EPA Method 245.1/7470.7471
Polychlorinated Biphenols	PCBs	0.33	EPA Method 608/8081

Toxic Parameters

Parameter	Symbol	Aquatic Life Guidelines (ppm d.w.) ERM	SEL	Note
Arsenic	As	85		
Cadmium	Cd	9.6		
Chromium	Cr	145		
Copper	Cu	390		
Iron	Fe	.	40000	
Nickel	Ni	50		
Manganese	Mn		1100	
Lead	Pb	110		
Zinc	Zn	270		
Oil and Grease	O&G		1500	
Polyaromatic Hydrocarbons	PAHs	35		Sum of 12 PAH's

Graph 8. Classification and Distribution of Trenton Channel Project Sediment Results



Graph 8 (a). Classification and Distribution of Trenton Channel Project Sediment Results (annotated).

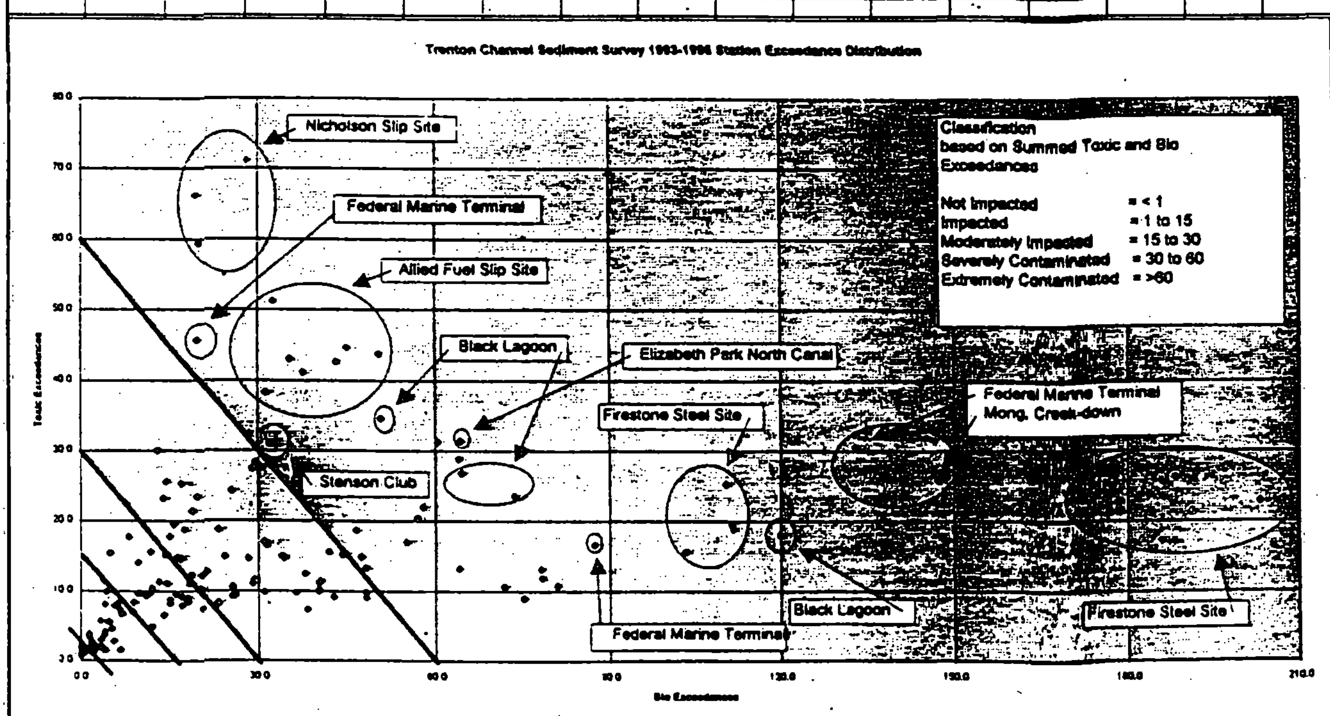


Figure 1. Trenton Channel Project: Sediment Survey Chronology

October 1993 (GLNPO/SWQD/UCSB)

Primary Objectives	Vertical and horizontal hotspot delineation Contaminant distribution in Lower TC
Secondary Objectives	Resuspension measurements

November 1993 (GLNPO/SWQD/MSU)

Primary Objective	Elizabeth Park Marina study

April 1994 (GLNPO/LLRS/SWQD)

Primary Objective	Vertical and horizontal hotspot delineation
Secondary Objective	Baseline data for hydroacoustic profiling

May 1994 (SWQD)

Primary Objective	Surficial contaminant distribution in mid and lower Trenton Channel

June 1994 (GLNPO/LLRS/SWQD)

Primary Objective	Hydroacoustic profiling-Trenton Channel (Caulfield Eng.)

November 1994 (SWQD)

Primary Objective	Elizabeth Park Marina surfical contaminant trends

April 1996 (LLRS)

Primary objective	Elizabeth Park Marina depositional rates

May 1996 (GLNPO/SWQD)

Primary Objective	Hotspot delineation and characterization of Upper TC Sediments
Secondary Objective	Support of Grassy Island NWR study

June 1996 (SWQD)

Primary Objectives	Ponar sediment sampling at tributaries to the Detroit River Confirmation of RAP hotspots

December 1996 (SWQD)

Primary Objective	Elizabeth Park Marina surfical contaminant trends

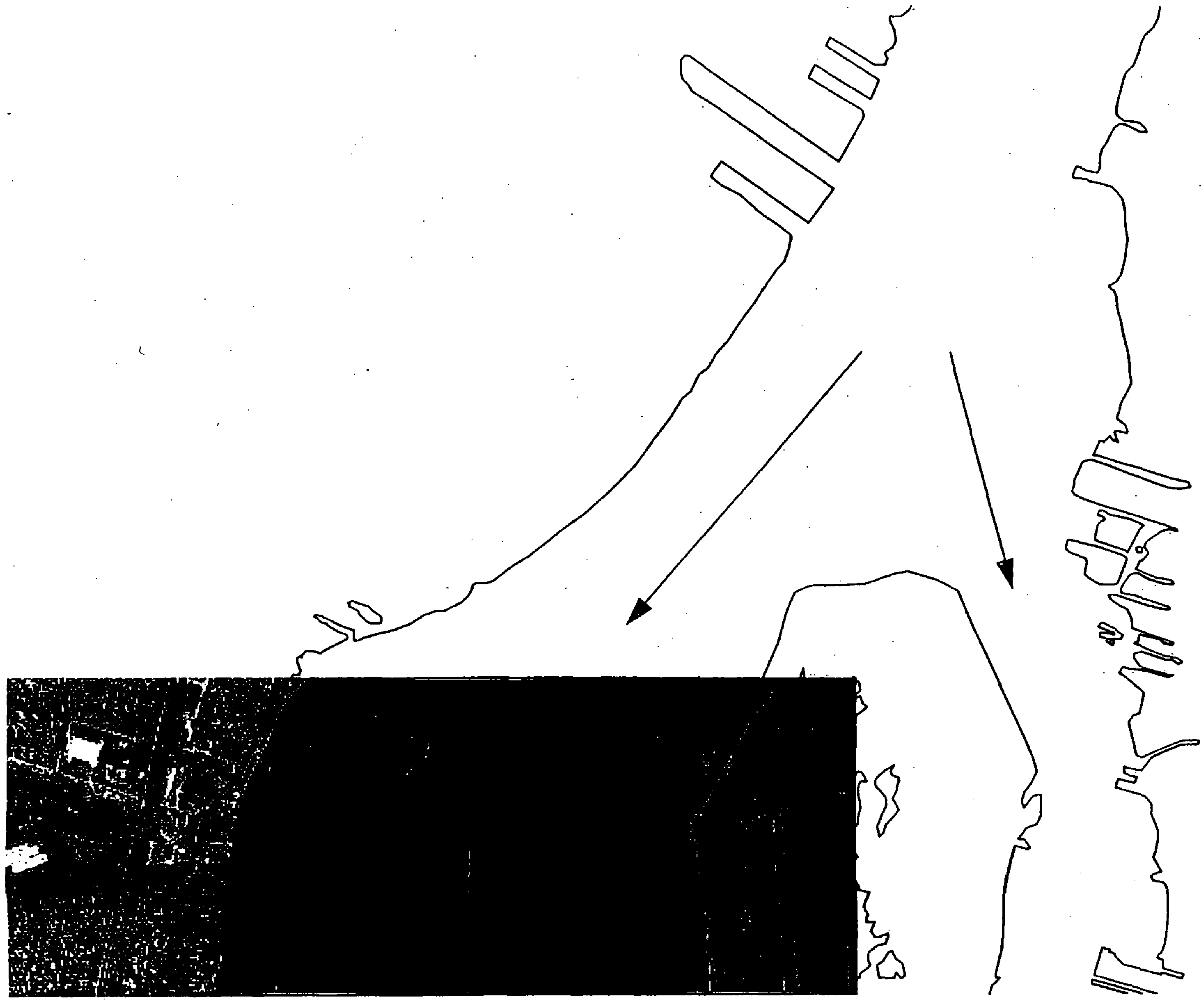


Figure 3. Upper Trenton Channel
Rouge River to EcorseCreek

OIL and GREASE

all values ppm dry weight

3.4 = surface grab

1.2 / 2.3 / 3.4 = surface/to/bottom core intervals

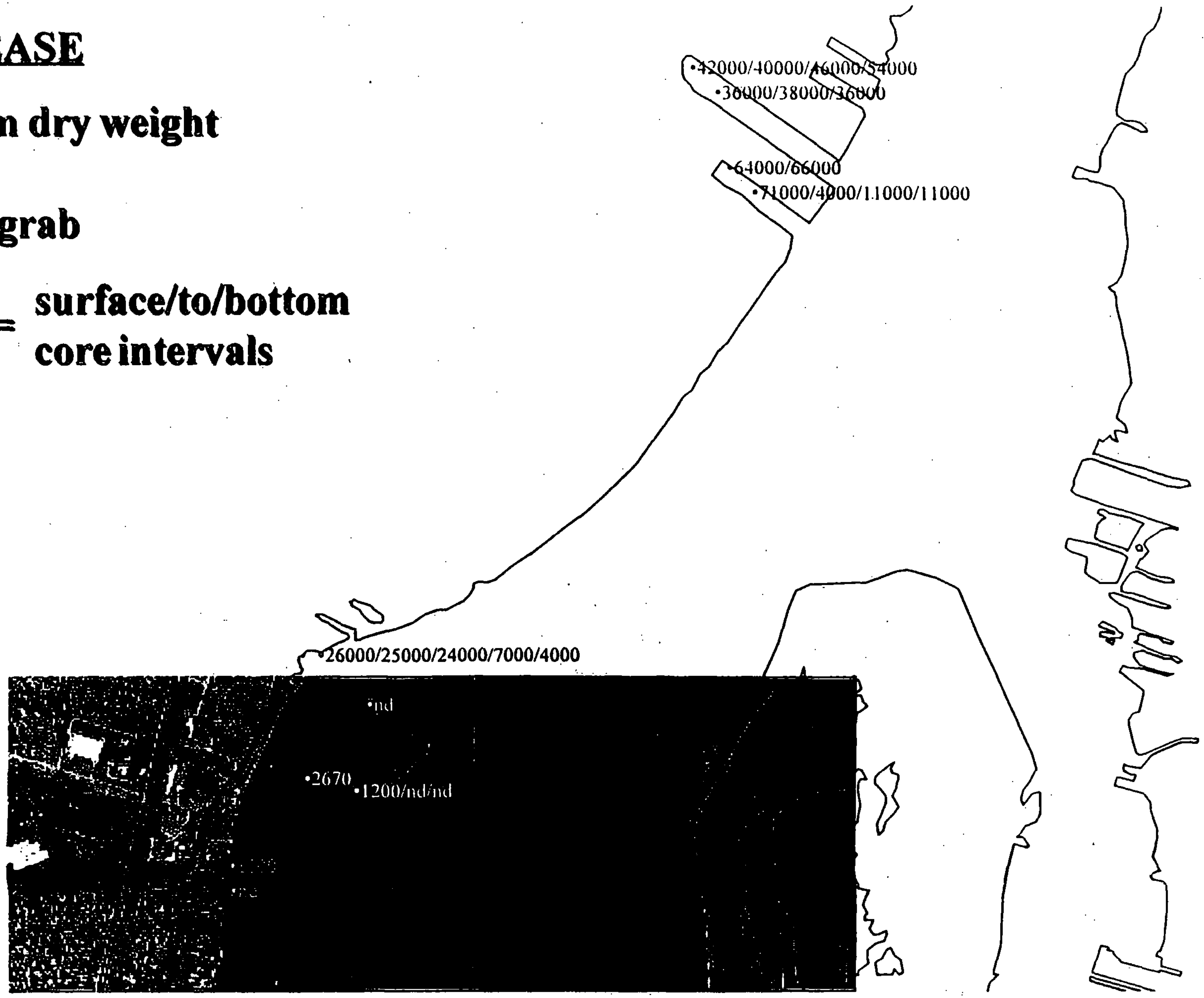


Figure 5. Upper Trenton Channel
Rouge River to EcorseCreek

TOTAL PCBS

all values ppm dry weight

3.4 = surface grab

1.2 / 2.3 / 3.4 = surface/to/bottom core intervals

Figure 7. Upper Trenton Channel Grassy Island toPt. Hennepin

Figure 9. Upper Trenton Channel
Pt. Hennepin to Grosse Ile Toll Bridge

MERCURY

all values ppm dry weight

3.4 = surface grab

1.2 / 2.3 / 3.4 =

surface/to/bottom core intervals

Figure 11. Firestone Steel Site

OIL and GREAS

all values ppm
dry weight

3.4 = surface grab

1.2 / 2.3 / 3.4 =

surface/to/bottom
core intervals

Figure 13. Firestone Steel Site

MERCURY

all values ppm dry weight

3.4 = surface grab

1.2 / 2.3 / 3.4 = surface/to/bottom core intervals

Figure 15. Federal Marine Terminal /Monguagon Creek Area

LEAD

all values ppm dry weight

3.4 = surface grab

1.2 / 2.3 / 3.4 = surface/to/bottom core intervals

Figure 17. Federal Marine Terminal /Monguagon Creek Area

MERCURY

all values ppm dry weight

3.4 = surface grab

1.2 / 2.3 / 3.4 = surface/to/bottom core intervals

Figure 19. Black Lagoon

OIL and GREASE

all values ppm dry weight

3.4 = surface grab

1.2 / 2.3 / 3.4 = surface/to/bottom core intervals

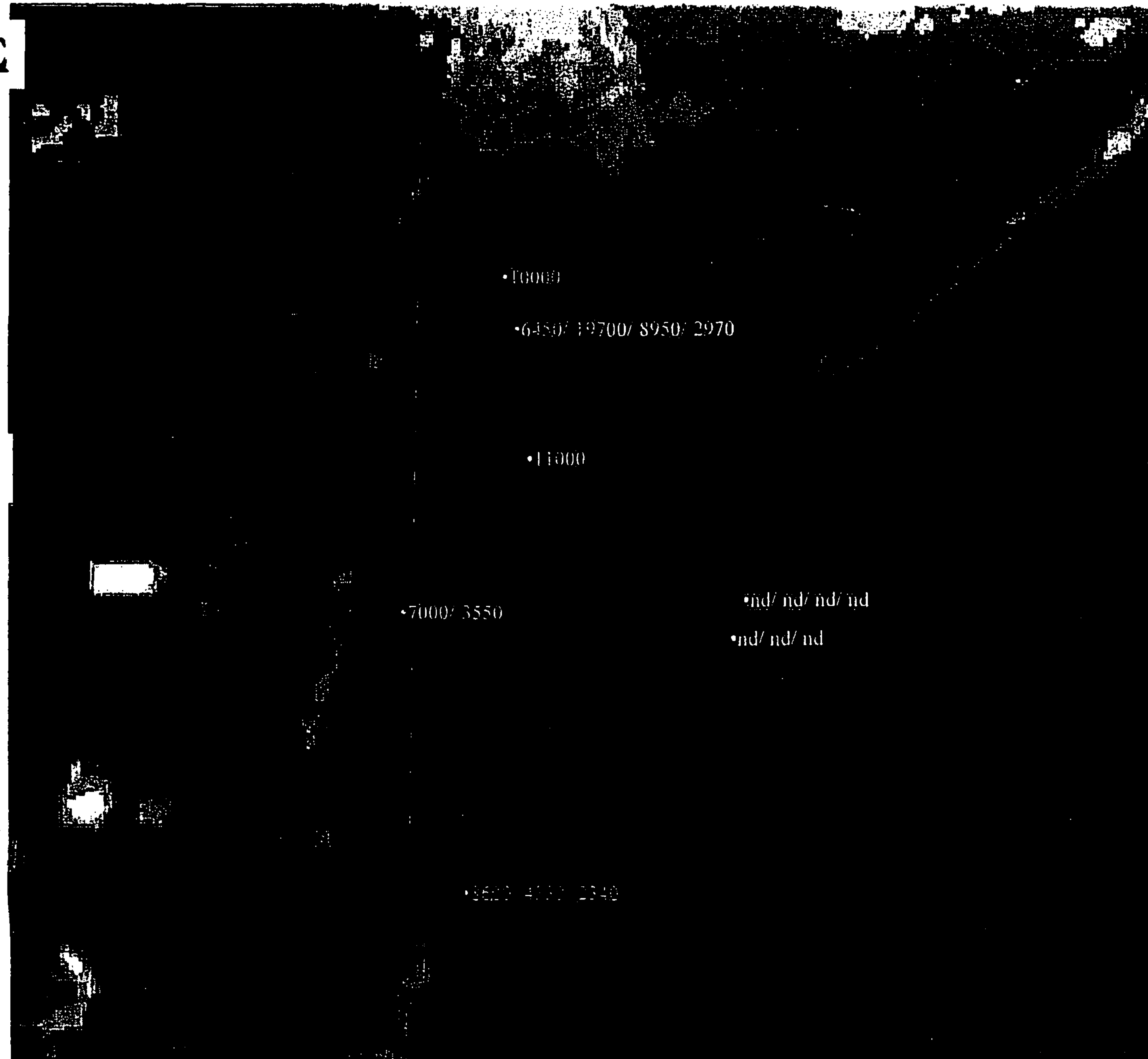


Figure 21. Black Lagoon

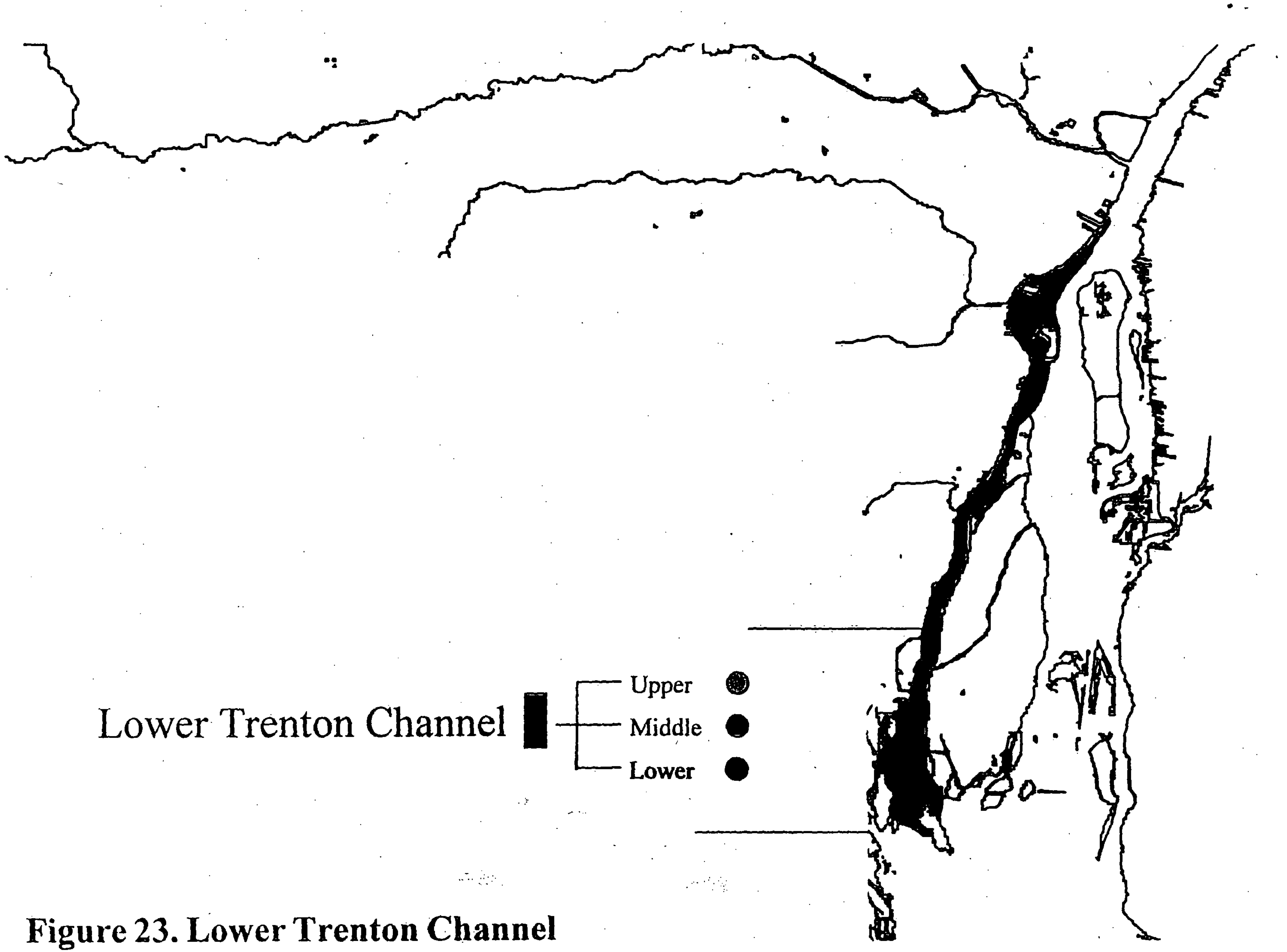


Figure 23. Lower Trenton Channel
Elizabeth Park North Canal to Celeron Island

TOTAL PCBS

all values ppm dry weight

3.4 = surface grab

1.2 / 2.3 / 3.4 = surface/to/bottom core intervals

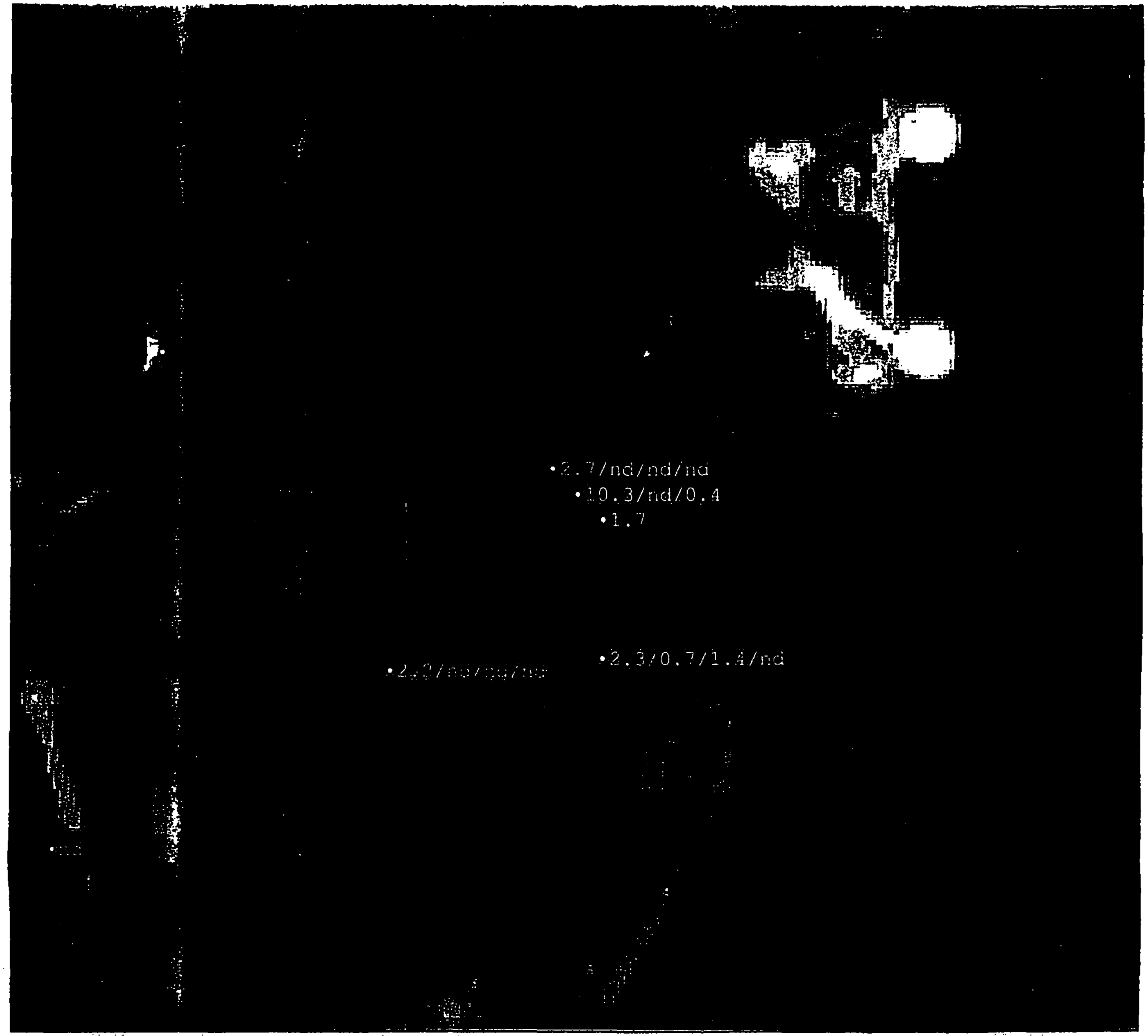


Figure 25. Elizabeth Park North Canal

ZINC

all values ppm dry weight

3.4 = surface grab

1.2 / 2.3 / 3.4 = surface/to/bottom core intervals

↑ -Site location

-1993 **Year sampled**

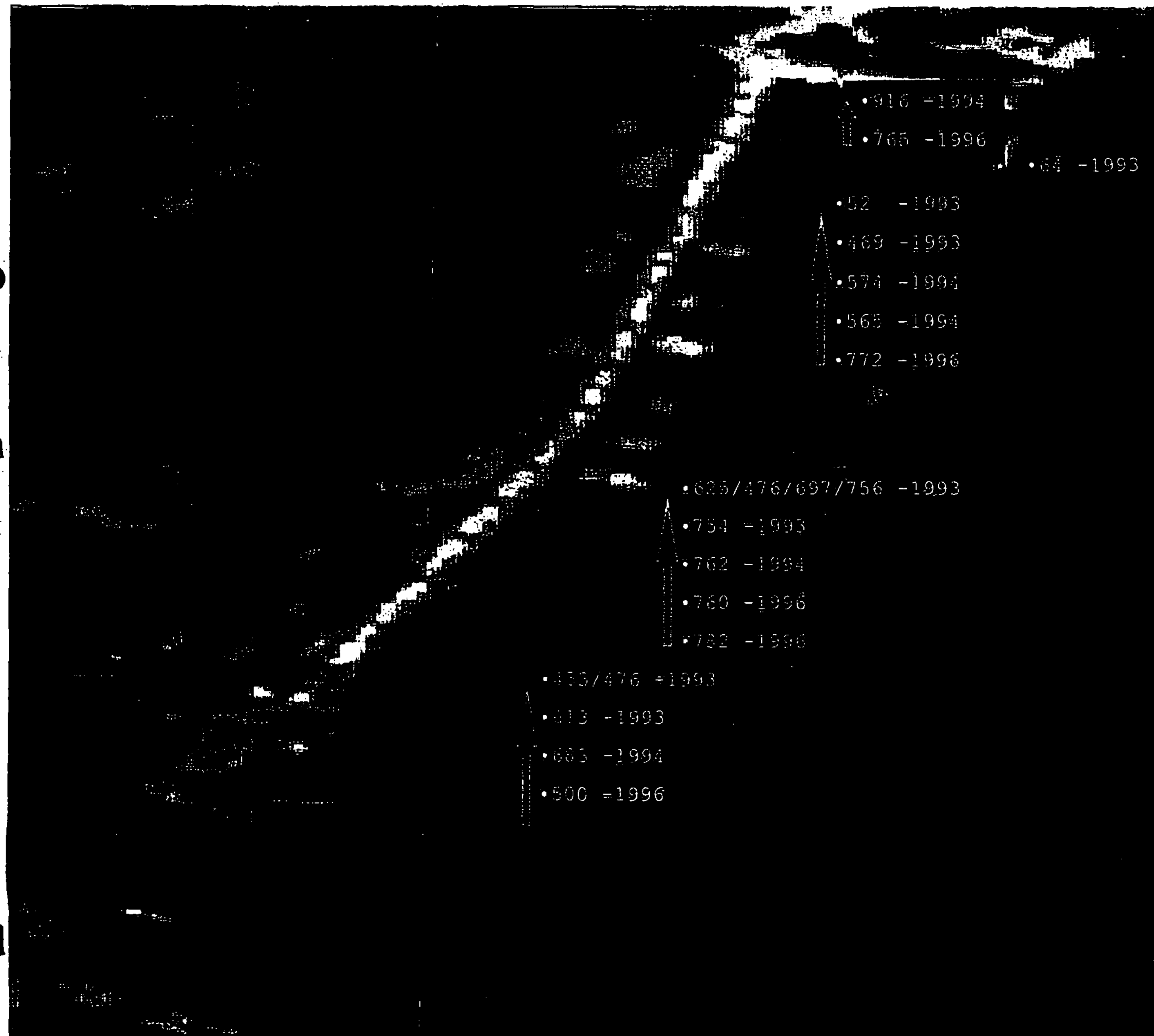


Figure 27. Elizabeth Park Marina

ZINC

all values ppm dry weight

3.4 = surface grab

1.2 / 2.3 / 3.4 = surface/to/bottom core intervals

Sample Site

Figure 29. Elizabeth Park South Canal Area

Appendix A. Mass Spec-Library Search Interpretations

3. Hexane dioic acid (adipic acid) mono (ethyl hexyl) ester:

90% of adipic acid esters are commercially used as plasticizers. 10% are used commercially as high performance lubricants. 2-ethyl hexyl adipates are reported to be excellent low temperature lubricants. They also offer low temperature flexibility in PVC formulations.

4. Isopentane/Isoprene, Terpene and Steroid Type Compounds

Many chemical components/compounds of plants and animals have the common characteristic of their carbon skeletons being evenly divisible into iso-C_5 units, i.e. isoprene or isopentane units. These units may be joined in regular sequences head-to-tail, or, in head-to-tail groupings that are joined tail-to-tail. Many of these compounds or fragments of compounds were detected in the sediment analysis.

a. isopentane sequencing:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Dodecane
Pentadecane
Hexadecane
eicosane

chemicals identified in this grouping include:

2-methyl eicosane
2,6,10 and 2,6,11-trimethyl dodecanes
1,6,10,14 and 2,6,10,14-tetramethylpentadecanes (pristane)
2,6,10,14 tetramethylhexadecane (phytane)

Squalene is a common naturally occurring substance that is also used as a commercial chemical intermediate in steroid production. Lanolin (containing sterols including lanosterol which may be derived from squalene) is used in ointments, soaps, face and hand creams, suntan preparations, hair-sets and leather finishing.

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Appendix B. Sediment Survey Results-Data Tables

- Metals
- PCBs
- PAHs
- Oil and Grease
- Grain Size
- Acid Volatile Sulfides
- TOC, Density
- Lat-Long
- Classification A: Upstream to Downstream
- Classification B: Most Contaminated to Least Contaminated

TRENTON CHANNEL PROJECT		HEAVY METALS mg/kg										
SEDIMENT CHEMISTRY RESULTS	Core											
	Length											
SITE DESCRIPTION	in cm	SOLIDS	TOT. As	TOT Cd	TOT. Cr	TOT. Cu	TOT. Fe	TOT. Pb	TOT. Mn	TOT. Hg	TOT. Ni	TOT. Zn
ERM Long and Morgan, 1990			35	9.6	145	390		110		1.3	50	270
SEL (Persuad et. al. OME, 1993)							40000		1100			
Quantification Level (EPA Method 245.1/7470,7471)										0.1		
51 C1 Firestone upper	000-030	41	9.4	10	150	140	30000	200	410	13	30	190
	030-091	53	13	15	230	300	32000	300	470	16	100	660
	091-152	51	12	13	190	250	26000	250	410	16	94	570
	152-194	48	13	10	140	190	25000	130	410	9.5	70	460
56C1 Firestone Steel -Mid (45P site)	000-030	43	12	15	260	300	31000	240	550	16	100	590
	030-091	54	11	15	140	210	25000	190	420	10	57	520
	091-124	57	9.2	10	58	190	18000	160	310	2.9	39	430
45P Firestone Steel	PONAR	45	7.6	11	165	199	44000	190	711	10	76	592
	PONAR	47	13	11	166	221	41000	211	574	6.5	36.8	662
50P Firestone lower	Ponar	42	9.4	19	250	150	35000	260	900	10	130	790
MONGUAGON CREEK-UPSTREAM	000-030	41	9.5	40	119	140	37500	140	570	2.4	68	563
MONGUAGON CREEK-UPSTREAM	030-104	47	9.9	20	467	246	44100	333	551	1.2	210	364
MONGUAGON CREEK-UPSTREAM	104-142	53	11	14	303	217	41500	333	520	9.9	160	721
MONGUAGON CREEK-UPSTREAM	000-030	41	7.8	33	109	118	38800	149	569	2.5	70	458
MONGUAGON CREEK-UPSTREAM	030-076	43	9.1	21	248	183	45900	277	544	3.4	160	625
MONGUAGON CREEK-UPSTREAM	076-150	47	9.9	22	500	255	42900	352	554	3.1	160	525
MONGUAGON CREEK-UPSTREAM	150-190	60	12	7.6	170	122	24400	212	474	5.7	73	377
49E Monguagon Creek	Eckman	48	7.4	6.2	77	70	22000	150	440	0.29	64	2300
55 - Monguagon Creek	Ponar	58	nm	11.2	178	123	45900	179	455	<0.1	103	850
FI - Fighting Island	Ponar	33	nm	nd	21	14	14200	nd	236	<0.1	17	32
25 C1 MNCK DNS-Nearshore	000-027	70	5.1	29	78	91	27700	115	422	1.1	46	412
25 C1	027-051	61	6.5	30	99	101	28900	142	484	0.95	56	449
25 C1	051-095	58	6.7	15	167	131	35700	213	486	1.5	90	648
25 C1	095-132	71	9	17	405	239	48300	302	542	1.4	251	987
21 C1 MNCK DNS-Offshore	000-027	30	3.5	<0.05	9.2	14	14100	9.1	251	<0.1	15	34
21 C1	027-051	34	3.9	<0.05	13	15	14900	17	205	0.23	17	50
MONGUAGON CREEK-DOWN	000-150	43	9.5	19	437	252	42000	340	556	3.9	200	879
MONGUAGON CREEK-DOWN	150-163	50	10	22	456	291	51700	424	632	11	210	1200
BLACK LAGOON-CENTER	000-030	38	6.5	14	102	99	53200	193	744	1.4	49	3090
BLACK LAGOON-CENTER	030-120	34	9	17	345	219	70100	449	1070	3.1	160	1720
BLACK LAGOON-CENTER	120-210	40	22	11	162	236	112000	439	1440	6.8	90	1030
BLACK LAGOON-CENTER	210-229	75	4.9	3.7	45	99	19800	76	330	1.4	41	225
BLACK LAGOON-LOWER	000-060	42	24	12	191	226	137000	574	2060	5.6	100	1340
BLACK LAGOON-LOWER	060-152	51	10	11	183	247	35800	187	488	7.8	72	554
BLACK LAGOON-LOWER	152-203	54	10	9.8	121	166	29000	118	397	4.8	56	444
BLACK LAGOON-EAST	000-055	31	9.1	<0.050	9.8	5.2	7430	3.9	148	<0.1	9.5	27
BLACK LAGOON-EAST	055-103	80	1.9	<0.050	8.6	3.7	8150	3.4	173	<0.1	7.1	17
BLACK LAGOON-EAST	103-166	79	2.3	<0.050	9.6	5.6	7260	4.1	162	<0.1	7.9	17
BLACK LAGOON-EAST	166-229	80	2.6	0.067	9.7	7	7480	3.9	179	<0.1	8.6	23
BLACK LAGOON-EAST	000-035	80	1.8	<0.050	9	4.7	6840	3.6	128	<0.1	7.6	26
BLACK LAGOON-EAST	035-133	77	1.9	<0.050	9.3	4.2	7130	3.6	181	<0.1	7.9	21
BLACK LAGOON-EAST	133-182	76	3.2	<0.050	11	8.6	8380	4	201	<0.1	9.5	29
24 C1 BLLG-Nearshore	000-030	40	7.1	16	121	110	53300	218	743	1.2	58	3320
24 C1 (WWES Lab)	030-075	32	7.3	11	315	200	57000	337	627	1.2	144	2410
24 C1 BLLG-Nearshore	030-075	32	12	30	418	233	76500	468	1100	1.3	206	3200
(MDNR Lab)												
47E BLLG	Eckman	35	7	3.3	98	96	43000	160	620	11	52	1300
57 - Black Lagoon	Ponar	55	nm	3.7	156	111	73000	254	671	<0.1	71	2060

TRENTON CHANNEL PROJECT		HEAVY METALS mg/kg									
SEDIMENT CHEMISTRY RESULTS	Core length										
SITE DESCRIPTION	in cm	SOLIDS	TOT. As	TOT Cd	TOT. Cr	TOT. Cu	TOT. Fe	TOT. Pb	TOT Mn	TOT. Hg	TOT. Ni	TOT. Zn
ERM (Long and Morgan, 1990)			35	9.6	145	390		110		1.3	50	270
SEL (Persaud et. al. OME, 1993)							40000		1100			
Quantification Level (EPA Method 245.1/7470.7471)										0.1		
EPM (new site)	Ponar		12	13	140	167	47000	258	721	4.4	149	316
EPM-N	Eckman	24	10	5.5	110	147	43000	141	575	1.5	60.5	165
S11-EPM Upland	Ponar		12	6.9	114	115	36000	149	382	2.3	62.4	574
S11D- EPM Upland Dup.	Ponar		12	7	113	117	36000	139	400	2.3	62	565
EPM-1 (S11-EPM Upland)	Eckman	32	10	5.9	112	137	43000	153	509	1.9	60.9	772
S12-EPM Mid	Ponar		10	9.4	187	125	40000	175	449	2.9	30.6	762
EPM-2 (S12-EPM Mid)	Eckman	36	10	6	121	139	45000	147	470	1.6	68.5	760
EPM2-dup (S12- EPM Upland)	Eckman	36	11	5.9	117	136	43000	149	655	1.7	67.9	782
S13-EPM South	Ponar		13	7.4	128	129	45000	177	718	3.1	64.4	683
EPM-3 (S13-EPM South)	Eckman	54	9.1	2.5	64	65	41000	100	495	3.8	49	500
34P EPSC DOCK	PONAR	42.4	12	13	205	165	58900	272	777	1.6	3.4	1010
35P EPSC-Inlet	PONAR	44.9	11	11	100	126	49000	149	658	1.2	3.4	1200
35PC2	PONAR	44.9	9.4	9.5	93	118	47000	139	660	1	3.5	1100
20 C1 EPSC-Inlet	000-083	53	13	13	225	160	58700	273	558	4	102	839
20 C1	083-093	55	22	11	186	153	82700	347	942	5.1	86	1050
49E EPSC	Eckman	20	7.6	7.2	71	100	34000	100	530	0.96	48	590
36P Monsanto Lagoon	PONAR	42	23	16	193	194	80200	246	1080	3.9	69	996
19 C1 Monsanto Bay	000-053	52	3.3	3.2	150	165	59100	222	736	3.6	71	701
19 C1	053-095	53	3.8	3.6	86	125	66300	148	729	3.9	55	433
19 C2 Monsanto Bay	000-051	51	9.3	7.6	135	145	44300	201	622	3.3	63	607
19 C2	051-085	65	3.9	3.4	77	113	59800	139	709	3.2	49	399
CHRYSLER BAY-INNER	000-030	15	3.6	0.55	7.1	17	7930	10	80	0.2	11	88
CHRYSLER BAY-INNER	030-059	69	3.6	0.15	15	29	13700	13	75	<0.10	21	72
CHRYSLER BAY-INNER	058-079	78	7.7	<0.05	12	17	19800	13	123	<0.10	23	98
CHRYSLER BAY-OUTER	000-013	65	5.9	4.4	78	82	27100	105	508	1.5	53	523
CHRYSLER BAY-OUTER	013-061	70	7.1	0.29	14	19	16100	11	350	<0.10	27	67
37P Chry Bay Marsh Inlet	PONAR	52.8	1.9	<0.05	28.5	33	17300	31	310	0.18	25	250
39P Swan Island-North	PONAR	41	4.3	3.2	37	46	17700	44	286	0.38	29	178
38P Above Humbug Marina	PONAR	25	4.6	7.4	73	94	25200	87	349	0.87	54	661
S9 - Chrysler Bay	Ponar	73	nm	4.2	77	61	55200	95	820	<0.1	56	765
CELERON ISLAND	000-043	51	4.1	0.3	9.7	34	10600	22	142	0.16	16	68
CELERON ISLAND	043-074	72	4.3	0.22	15	23	14500	12	100	<0.10	22	76
CELERON ISLAND	074-107	90	7.1	0.12	6.1	18	17500	7.1	359	<0.10	19	61

TRENTON CHANNEL PROJECT									
SEDIMENT CHEMISTRY RESULTS			PCBs SCAN						
	Core Length		mg/kg d.w.						
SITE DESCRIPTION	in cm	TOT. PCB	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254	PCB-1260
ERM (Long and Morgan, 1990)		0.4							
Quantification Level (EPA Method 609/8081)		0.33							
15 C1 T.C. North Marsh	000-022		<0.33	<0.42	<0.33	<0.33	<0.33	<0.33	<0.33
15 C1	022-062		<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
15 C1	062-100		<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
51 C 1 Firestone Upper	000-030	13.40					3.2	1.9	13.4
	030-091	9.31					4.39	1.95	2.97
	091-152	14.20					4.55	2.5	7.05
	152-194	5.39					2.96	2.43	< 0.33
66C1 Firestone Steel -Mid (45P si	000-030	4.99					1.36	1.36	1.67
	030-091	3.85					1.31	0.99	1.65
	091-104	0.65					< 0.33	0.18	0.47
45P Firestone Steel	PONAR	1.10	<4.4	<1.2	<4.4	<4.4	<4.4	<0.33	1.10
	PONAR	2.20	<1.1	<1.1	<1.1	<1.1	<1.1	2.20	<1.1
45PC2	PONAR	2.56	<1.1	<1.1	<1.1	<1.1	<1.1	1.70	0.97
50P Firestone lower	Ponar	3.43					1.26	1.31	0.36
MONGUAGON CREEK-UPSTREAM	000-030	2.4	<2.0	<1.3	<1.3	<2.0	<2.0	<2.6	2.4
MONGUAGON CREEK-UPSTREAM	030-104	2.5	<2.9	<2.9	<2.9	<2.9	<2.9	<2.9	2.5
MONGUAGON CREEK-UPSTREAM	104-142	11.2	<1.3	<1.3	<1.3	<1.3	5.7	5.5	<1.3
MONGUAGON CREEK-UPSTREAM	000-030	2.1	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	2.1
MONGUAGON CREEK-UPSTREAM	030-076	9.9	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	9.9
MONGUAGON CREEK-UPSTREAM	076-150	9.7	<2.8	<5.6	<2.8	<2.8	4.9	<4.8	4.8
MONGUAGON CREEK-UPSTREAM	150-180	10	<2.2	<4.4	<2.2	<2.2	5.7	4.3	<3.9
48E Monguagon Creek	Eckman	1.52							1.52
S5 - Monguagon Creek	Ponar	6.18							
FI - Fighting Island	Ponar	0.08							
25 C1 MNCK DNS-Nearshore	000-027		<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
25 C1	027-051		<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
25 C1	051-095	1.08	<0.33	<0.33	<0.33	<0.33	0.36	<0.33	0.72
25 C1	095-132	1.15	<0.33	<0.33	<0.33	<0.33	0.58	<0.33	0.57
21 C1 MNCK DNS-Offshore	000-027		<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
21 C1	027-051		<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
MONGUAGON CREEK-DOWN	000-150	5.9	<0.33	<2.9	<0.33	<0.33	2.3	<5.5	3.6
MONGUAGON CREEK-DOWN	150-168	12.3	<0.33	<5.3	<0.33	<0.33	9.6	<7.2	2.7
BLACK LAGOON-CENTER	000-030	0	<8.91	<8.91	<9.91	<8.91	<8.91	<8.91	<8.91
BLACK LAGOON-CENTER	030-120	6.5	<2.0	<2.0	<2.0	<2.0	2.4	<3.9	4.1
BLACK LAGOON-CENTER	120-210	1.8	<1.1	<1.1	<1.1	<1.1	<1.1	1.8	<1.1
BLACK LAGOON-CENTER	210-229	0	<0.44	<1.3	<0.44	<0.44	<0.44	<0.44	<0.44
BLACK LAGOON-LOWER	000-060	2.3	<3.2	<3.2	<3.2	<3.2	<3.2	2.8	<1.3
BLACK LAGOON-LOWER	060-152	0	<4.0	<5.2	<4.0	<4.0	<4.0	<2.7	<1.3
BLACK LAGOON-LOWER	152-203	0	<1.7	<1.7	<2.5	<1.7	<1.7	<1.7	<0.81
BLACK LAGOON-EAST	000-055	0	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
BLACK LAGOON-EAST	055-103	0	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
BLACK LAGOON-EAST	103-166	0	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
BLACK LAGOON-EAST	166-229	0	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
BLACK LAGOON-EAST	000-035	0	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
BLACK LAGOON-EAST	035-133	0	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
BLACK LAGOON-EAST	133-192	0	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
24 C1 BLLG-Nearshore	000-030	1.64	<0.42	<2.8	<0.42	0.81	<0.42	0.93	<0.42
24 C1 (WWES Lab)	030-075	2.50	<0.51	<0.51	<0.51	<0.51	1.10	<0.51	1.40
24 C1 BLLG-Nearshore	030-075								
(MDNR Lab)									
47E BLLG	Eckman	3.27					1.2	0.92	1.15
S7 - Black Lagoon	Ponar	4.75							

TRENTON CHANNEL PROJECT									
SEDIMENT CHEMISTRY RESULTS		PCBs SCAN							
	Core Length	mg/kg d.w.							
SITE DESCRIPTION	in cm	TOT. PCB	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254	PCB-1260
EPM Long and Morgan, 1990)		0.4							
Quantification Level (EPA Method 608/8081)		0.33							
S11-EPM Upland	Ponar	0							
S11D- EPM Upland Dup.	Ponar	0							
EPM-1 (S11-EPM Upland)	Eckman	< 0.33							
S12-EPM Mid	Ponar	0							
EPM-2 (S12-EPM Mid)	Eckman	< 0.33							
EPM2-dup (S12- EPM Upland)	Eckman	0							
S13-EPM South	Ponar	0							
EPM-3 (S13-EPM South)	Eckman	< 0.33							
34P EPSC DOCK	PONAR	0.93	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	0.83
35P EPSC-Inlet	PONAR	0.00	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
35PC2	PONAR	0.00	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
20 C1 EPSC-Inlet	000-083	2.40	<0.33	<0.33	<0.33	<0.33	1.30	1.10	<0.33
20 C1	083-099	1.33	<0.33	<0.33	<0.33	<0.33	0.54	0.79	<0.33
49E EPSC	Eckman	0							
36P Monsanto Lagoon	PONAR	0.90	<0.33	<0.33	<0.33	<0.33	0.57	<0.33	0.33
19 C1 Monsanto Bay	000-053	0.54	<0.33	<0.33	<0.33	<0.33	<0.33	0.54	<0.33
19 C1	053-085	1.15	<0.3	<1.0	<0.33	<0.33	0.36	0.79	<0.33
19 C2 Monsanto Bay	000-051	2.40	<0.33	<0.33	<0.33	<0.33	1.10	1.30	<0.33
19 C2	051-085	1.37	<0.33	<0.33	<0.33	<0.33	0.42	0.95	<0.33
CHRYSLER BAY-INNER	000-030	0	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
CHRYSLER BAY-INNER	030-058	0	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
CHRYSLER BAY-INNER	058-079	0	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
CHRYSLER BAY-OUTER	000-013	1.79	<0.41	<0.31	<0.41	<0.41	0.98	0.81	<0.41
CHRYSLER BAY-OUTER	013-061	0	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
37P Chry Bay Marsh Inlet	PONAR	0.00	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
39P Swan Island-North	PONAR	0.00	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
38P Above Humbug Marina	PONAR	0.00	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
S9 - Chrysler Bay	Ponar	1.39							
CELERON ISLAnd	000-043	0	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
CELERON ISLAnd	043-074	0	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
CELERON ISLAnd	074-107	0	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33

			acenaphthene	acenaphthylene	anthracene	benzo(a)anthracene	benzo(b&k)fluoranthene	benzo(a)pyrene	benzo(g,h,i)perylene	chrysene	dibenzo(a,h)anthracene	fluoranthene	fluorene	indendo(1,2,3-cd)pyrene	napthalene	phenanthrene	pyrene
TRENTON CHANNEL PROJECT																	
SEDIMENT CHEMISTRY RESULTS																	
ERM Long and Morgan, 1990		35.															
			PAH SCAN														
SITE DESCRIPTION	Core Length		mg/kg d.w.														
	in cm	TOT PAHS	A1	A2	A3	B1	B2	B3	B4	C1	D1	F1	F2	I1	N1	P1	P2
69C1 Wyandotte Yatch Club	000-030	33.44			0.34	2.3	4.7	2.4	1.5	3.4		5.3		1.6	1.2	3.8	5.7
	030-066	32.14			0.37	2.3	4.5	2.4	1.4	3.3		5.1		1.6	1.2	3.4	5.5
68P N of Pt. Hennepin	Ponar	12.29				1	1.9	1.1	0.7	1.2		1.8		0.72	0.68	1.3	2
68E N of Pt. Hennepin	Eckman	4.88				0.68		0.6		0.7		1.1				0.69	1.1
67C1 Portofino	000-030	14.3				1.2	2.5	1.3	1	1.6		2.1		1		1.3	2.3
43P Portofino Slip	PONAR	6.99	<0.33	<0.33	<0.33	0.61	1.3	<0.33	<0.3	0.8	<0.33	1.5	<0.33	0.42	<0.33	0.96	1.4
42P Pt. Hennepin	PONAR	1.14	<0.33	<0.33	<0.33	<0.33	0.3	<0.33	<0.3	<0.3	<0.33	<0.33	<0.33	<0.33	<0.33	0.44	0.7
15 C1 T.C. North Marsh	000-022	0	<0.33	<0.33	<0.33	<0.33	0.3	<0.33	<0.3	<0.3	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
15 C1	022-062	0	<0.33	<0.33	<0.33	<0.33	0.3	<0.33	<0.3	<0.3	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
15 C1	062-100	0	<0.33	<0.33	<0.33	<0.33	0.3	<0.33	<0.3	<0.3	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
51 C 1 Firestone upper	000-030	34.38			1.9	2.5	3.6	2.1	1.2	3.1		4.1	0.84	1.4	3	5.8	4.8
	030-091	38.69			1.5	2.6	3.5	1.9	1.1	2.9		3.5	0.84	1.2	6.5	4.9	6.2
	091-152	53.5	0.3		2.5	3.9	5.5	2.9	1.1	4.2		4.5	1.7	1.5	8.4	8	8.4
	152-194	38.85			1.4	3.2	4.5	2.4	1.3	3.4		3.1	0.84	1.4	5.9	4.8	8.6
66C1 Firestone Steel -Mid (	000-030	28.5			1.2	2.5	2.7	1.9	0.8	3.1		4.4	0.8	0.91	2.1	3.7	4.5
	030-091	34.66			1.4	2.9	4.3	2.4	1	3.4		5	1.1	1.1	2.7	4.6	4.8
	091-104	85.51	0.73	1	3.6	9.6	11	7.6	3.5	9.3	0.92	11	1.2	2.7	2.4	9.3	13
50P Firestone lower	Ponar	204.2	2.9		4.3	17	28	12	4.6	18	1.9	36	2.7	7.9	2.1	32	35
MONGUAGON CREEK-UPSTREAM	000-030	13.4	<0.41	<0.41	<0.41	1.1	2.1	1.1	1	1.5	<0.41	2	<0.41	0.71	0.52	1.3	2.1
MONGUAGON CREEK-UPSTREAM	030-104	5.8	<0.36	<0.36	<0.36	0.51	0.9	0.4	0.4	0.7	<0.36	0.97	<0.36	<0.36	<0.36	0.81	1.1
MONGUAGON CREEK-UPSTREAM	104-142	7.3	<0.33	<0.33	<0.33	0.59	0.9	0.4	0.3	0.8	<0.33	1.2	<0.33	<0.33	0.54	1.2	1.4
MONGUAGON CREEK-UPSTREAM	000-030	8.8	<0.41	<0.41	<0.41	0.91	1.5	0.9	0.7	1	<0.41	1.3	<0.41	0.51	<0.41	0.81	1.3
MONGUAGON CREEK-UPSTREAM	030-076	9.1	<0.39	<0.39	<0.39	0.37	1.4	0.8	0.6	1	<0.39	1.5	<0.39	0.47	<0.39	0.98	1.5
MONGUAGON CREEK-UPSTREAM	076-150	2.7	<0.36	<0.36	<0.36	<0.36	0.5	<0.36	<0.3	0.4	<0.36	0.61	<0.36	<0.36	<0.36	0.5	0.65
MONGUAGON CREEK-UPSTREAM	150-180	3.4	<0.33	<0.33	<0.33	0.33	0.6	<0.33	<0.3	0.5	<0.33	0.66	<0.33	<0.33	<0.33	0.69	0.67
48E Monguagon Creek	Eckman	100.37		1.1	2.3	11	19	9.3	2.7	9.4	1.3	14	0.97	4.9	3.1	6.3	15
SS - Monguagon Creek	Ponar	218.4															
FI - Fighting Island	Ponar	0															
25 C1 MNCK DNS-Nearshore	000-027	7.82	<0.33	<0.33	<0.33	0.77	0.9	0.9	0.5	0.9	<0.33	1.4	<0.33	0.47	<0.33	0.85	1.3
25 C1	027-051	8.39	<0.33	<0.33	<0.33	0.75	1.3	0.8	0.5	0.9	<0.33	1.5	<0.33	0.41	<0.33	0.85	1.4
25 C1	051-095	9.31	<0.33	<0.33	<0.33	0.62	0.9	0.6	0.4	0.7	<0.33	1.2	<0.33	<0.33	<0.33	0.73	1.2
25 C1	095-132	3.58	<0.33	<0.33	<0.33	0.39	0.4	<0.33	<0.3	0.4	<0.33	0.83	<0.33	<0.33	<0.33	0.53	0.99
21 C1 MNCK DNS-Offshore	000-027	0	<0.33	<0.33	<0.33	<0.33	0.3	<0.33	<0.3	<0.3	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
21 C1	027-051	0	<0.33	<0.33	<0.33	<0.33	0.3	<0.33	<0.3	<0.3	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
MONGUAGON CREEK-DOWN	000-150	9.1	<0.35	<0.35	<0.35	0.71	1.2	0.6	0.4	1	<0.35	1.5	<0.35	<0.35	0.53	1.4	1.7
MONGUAGON CREEK-DOWN	150-169	4.2	<0.33	<0.33	<0.33	0.36	0.6	<0.33	<0.3	0.5	<0.33	0.78	<0.33	<0.33	0.34	0.84	0.82
BLACK LAGOON-CENTER	000-030	7.5	<0.44	<0.44	<0.44	0.73	1.3	0.7	0.7	1	<0.44	1.2	<0.44	<0.44	<0.44	0.65	1.3
BLACK LAGOON-CENTER	030-120	10.9	<0.49	<0.49	<0.49	0.85	1.5	0.7	0.7	1.5	<0.49	1.8	<0.49	<0.49	<0.49	1.8	2
BLACK LAGOON-CENTER	120-210	19.1	<0.42	<0.42	0.58	1.4	1.8	0.9	0.7	2.1	<0.42	3.1	0.83	0.48	0.8	3.2	3.5
BLACK LAGOON-CENTER	210-229	15.1	<0.33	<0.33	0.51	1.7	2.1	1.3	0.9	1.7	<0.33	2.4	<0.33	0.83	<0.33	1.4	2.6

pans

TRENTON CHANNEL PROJECT
SEDIMENT CHEMISTRY RESULTS

A1 = acenaphthene; A2 = acenaphthylene; A3 = anthracene; B1 = benzo(a)anthracene; B2 = benzo(b&k)fluoranthene; B3 = benzo(a)pyrene; B4 = benzo(g,h,i)perylene; C1 = chrysene; D1 = dibenzo(a,h)anthracene; F1 = fluoranthene; F2 = fluorene; I1 = indendo(1,2,3-cd)pyrene; N1 = napthalene; P1 = phenanthrene; P2 = pyrene

SITE DESCRIPTION	Core Length in cm	TOT PAHS	A1	A2	A3	B1	B2	B3	B4	C1	D1	F1	F2	I1	N1	P1	P2
EPM (Long and Morgan, 1990)		35															
		PAH SCAN mg/kg d.w.															
31P EPC Bridge 3	PONAR	10.3	<0.5	<0.5	<0.5	2	<1	<1.0	<2.5	3.4	<2.5	1.7	<0.5	<2.5	<0.5	1	2.2
32P EPC Bridge 4	PONAR	8.1	<0.33	<0.93	<0.93	1.3	<1.7	<1.7	<4.1	1.3	<4.1	1.9	<0.83	<4.1	<0.83	1.1	1.9
33P EPC Bridge 5	PONAR	14.8	<0.48	<0.48	0.42	2.4	<.35	<0.35	<2.4	3.4	<2.4	3.4	<0.48	<2.4	<0.48	2	3.2
EP MARINA-OUTSIDE	000-020	0.0	<0.33	<0.33	<0.33	<0.33	0.3	<0.33	<0.3	<0.3	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
EP MARINA-UPLAnd	000-006	0.0	<0.33	<0.33	<0.33	<0.33	0.3	<0.33	<0.3	<0.3	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
EP MARINA-RIVER BED UP.	000-010	8.3	<1.65	<1.65	<1.65	<1.65	2	<1.65	<1.5	2	<1.65	2	<1.65	<1.65	<1.65	<1.65	2.3
EP MARINA-RIVER BED UP	010-020	19.7	<0.33	<0.33	0.44	2.2	2.6	1.6	1.3	3.6	<0.33	2.8	0.46	0.49	0.59	<0.33	3.6
EP MARINA-RIVER BED UP.	020-029	18.2	<0.33	<0.33	0.76	1.9	2.2	1.3	1.1	2.7	<0.33	2.7	<0.33	0.58	<0.33	2	3
EP MARINA-RIVER BED UP.	029-038	8.2	<0.66	<0.66	<0.66	0.66	1.1	<0.66	<0.6	1.1	<0.66	1.1	<0.66	<0.66	<0.66	0.98	1.3
EP MARINA-RIVER BED DN.	000-013	38.5	<0.66	<0.66	0.74	3.6	7.1	4.3	3.2	5.2	<0.66	4.5	<0.66	2.5	<0.66	2.2	5.2
EP MARINA-RIVER BED DN.	013-018	35.3	<0.66	<0.66	0.67	3.5	6.5	4	3	4.9	<0.66	3.8	<0.66	2.3	<0.66	2	4.6
EP1 - North Marina	Ponar	45.4															
EP2 - Mid Marina	Ponar	35.8															
EP3 - South Marina	Ponar	66.1															
EPN (new site)	Ponar	12.62				1.4	1.5	2.3		2		1.8				1.9	1.7
EPM-N	Eckman	3.02								1		0.92					1.1
S11-EPM Upland	Ponar	9.16				1.1	1.1	1.5		1.6		1.2				0.95	1.6
S11D- EPM Upland Dup.	Ponar	9.36				0.98	1	1.4		1.4		1.2				0.94	1.4
EPM-1 (S11-EPM Upland)	Eckman	2.19								0.7		0.69					0.81
S12-EPM Mid	Ponar	20.73			0.53	2.6	2.7	4.1		3.3		2.4				2	2.6
EPM-2 (S12-EPM Mid)	Eckman	14.54				1.2	2.6	1.6	1.2	1.8		1.8		0.94		1.2	2.2
S13-EPM South	Ponar	18.19			0.42	2.2	2.1	2.9	1.5	3.7		1.6				1.5	2.3
EPM-3 (S13-EPM South)	Eckman	33.11			0.56	2.9	6.4	4.4	3.3	3.7	0.67	2.7		2.8	0.48	1.6	3.7
34P EPSC DOCK	PONAR	13	<0.6	<0.5	<0.5	2	<1.2	3.2	<3.0	2.8	<3.0	3	<0.6	<3.0	<0.6	2	<0.6
35P EPSC-Inlet	PONAR	13.3	<0.55	<0.55	<0.55	1.9	<1.1	3.5	<2.9	2.6	<2.8	2.8	<0.56	<2.8	0.6	1.9	<0.55
35PC2	PONAR	13.84	<0.5	<0.5	<0.5	2	<1.0	3.3	<2.5	2.6	<2.5	3.2	<0.5	<2.5	0.54	1.7	<0.5
20 C1 EPSC-Inlet	000-083	22.21	<0.33	<0.33	<0.33	2.6	2.6	2	1.4	4.3	0.45	2.4	<0.33	0.66	<0.33	1.8	4
20 C1	083-088	34.75	<0.33	<0.33	0.48	4.5	3.7	3	2	6.7	<0.33	3.8	0.46	0.91	<0.33	2.9	6.3
49E EPSC	Eckman	15.5					3.1	1.9		2.5		2.6				1.9	3.6
16P Monsanto Lagoon	PONAR	8.35	<0.39	<0.39	<0.39	1	1.2	0.9	0.5	1.9	<0.39	1.1	<0.39	<0.39	<0.39	<0.39	1.7
19 C1 Monsanto Bay	000-053	15.57	<0.33	<0.33	<0.33	2	1.3	1.4	0.3	2.7	<0.33	2.3	<0.33	0.5	<0.33	1.1	3
19 C1	053-085	17.22	<0.33	<0.33	0.49	1.3	2.5	1.7	1.2	2.3	<0.33	2.5	<0.33	0.83	<0.33	1.2	2.6
19 C2 Monsanto Bay	000-051	13.64	<0.33	<0.33	<0.33	1.5	1.7	1.1	0.9	2.2	<0.33	2	<0.33	0.49	<0.33	1.2	2.52
19 C2	051-095	22.4	<0.33	<0.33	0.75	2.2	2.7	1.9	1.3	2.9	0.41	3.5	<0.33	0.94	<0.33	2.1	3.8
CHRYSLER BAY-INNER	000-030	0.0	<0.66	<0.66	<0.66	<0.66	0.6	<0.66	<0.6	<0.6	<0.66	<0.66	<0.66	<0.66	<0.66	<0.66	<0.66
CHRYSLER BAY-INNER	030-058	0.0	<0.33	<0.33	<0.33	<0.33	0.3	<0.33	<0.3	<0.3	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
CHRYSLER BAY-INNER	058-079	0.0	<0.33	<0.33	<0.33	<0.33	0.3	<0.33	<0.3	<0.3	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
CHRYSLER BAY-OUTER	000-013	29.9	<0.33	<0.33	0.64	4	5.7	3.1	1.1	3	0.89	3.6	<0.33	2	<0.33	1.9	4
CHRYSLER BAY-OUTER	013-061	0.0	<0.33	<0.33	<0.33	<0.33	0.3	<0.33	<0.3	<0.3	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
37P Chry Bay Marsh Inlet	PONAR	0	<0.4	<0.4	<0.4	<0.4	<0.8	<0.8	<2.0	<0.4	<2.0	<0.4	<0.4	<2.0	<0.4	<0.4	<0.4
39P Swan Island-North	PONAR	9.9	<0.40	<0.40	<0.40	0.98	1.9	1.4	0.8	1.1	<0.40	1.4	<0.40	0.64	<0.40	0.42	1.3
38P Above Humbug Marina	PONAR	0	<0.66	<0.66	<0.66	<0.66	0.6	<0.66	<0.6	<0.6	<0.66	<0.66	<0.66	<0.66	<0.66	<0.66	<0.66
S9 - Chrysler Bay	Ponar	24.3															
CELERON ISLAnd	000-043	3.0	<0.33	<0.33	<0.33	0.46	0.7	0.5	<0.3	0.4	<0.33	0.44	<0.33	<0.33	<0.33	<0.33	0.56
CELERON ISLAnd	043-074	0.0	<0.33	<0.33	<0.33	<0.33	0.3	<0.33	<0.3	<0.3	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
CELERON ISLAnd	074-107	0.0	<0.33	<0.33	<0.33	<0.33	0.3	<0.33	<0.3	<0.3	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33

TRENTON CHANNEL PROJECT		
SEDIMENT CHEMISTRY RESULTS		
SEL (Persaud et. al. OME, 1993)		1500
SITE DESCRIPTION	CORE LENGTH	OIL & GREASE
	cm	mg/kg d.w.
69C1 Wyandotte Yatch C1	000-030	9000
	030-066	9000
68P N of Pt. Hennepin	Ponar	<50
68E N of Pt. Hennepin	Eckman	<50
67C1 Portofino	000-030	7000
43P Portofino Slip	PONAR	1390
42P Pt. Hennepin	PONAR	367
15 C1 T.C. North Marsh	000-022	<50
15 C1	022-062	<50
15 C1	062-100	<50
51 C 1 Firestone upper	000-030	11000
	030-091	19000
	091-152	16000
	152-194	15000
66C1 Firestone Steel -M	000-030	21000
	030-091	13000
	091-104	12000
45P Firestone Steel	PONAR	8410
	PONAR	
50P Firestone lower	Ponar	9000
MONGUAGON CREEK-UPSTREAM	000-030	7290
MONGUAGON CREEK-UPSTREAM	030-104	41200
MONGUAGON CREEK-UPSTREAM	104-142	23500
MONGUAGON CREEK-UPSTREAM	000-030	3530
MONGUAGON CREEK-UPSTREAM	030-076	21600
MONGUAGON CREEK-UPSTREAM	076-150	21600
MONGUAGON CREEK-UPSTREAM	150-180	12400
48E Monguagon Creek	Eckman	9000
S5 - Monguagon Creek	Ponar	5800
FI - Fighting Island	Ponar	200
25 C1 MNCK DNS-Nearshor	000-027	1110
25 C1	027-051	120
25 C1	051-095	444
25 C1	095-132	887
21 C1 MNCK DNS-Offshore	000-027	<50
21 C1	027-051	<50
MONGUAGON CREEK-DOWN	000-150	3930
MONGUAGON CREEK-DOWN	150-168	7640
BLACK LAGOON-CENTER	000-030	6450
BLACK LAGOON-CENTER	030-120	19700
BLACK LAGOON-CENTER	120-210	8950
BLACK LAGOON-CENTER	210-229	2970

TRENTON CHANNEL PROJECT
SEDIMENT CHEMISTRY RESULTS

SITE DESCRIPTION	CORE LENGTH	OIL & GREASE
SEL Persaud et. al. OME, 1993)		1500
	cm	mg/kg d.w
31P EPC Bridge 3	PONAR	nm
32P EPC Bridge 4	PONAR	nm
33P EPC Bridge 5	PONAR	nm
EP MARINA - OUTSIDE	000-020	<50
EP MARINA-UPLAnd	000-006	<50
EP MARINA-RIVER BED UP.	000-010	6850
EP MARINA-RIVER BED UP.	010-020	11500
EP MARINA-RIVER BED UP.	020-029	14700
EP MARINA-RIVER BED UP.	029-038	772
EP MARINA-RIVER BED DN.	000-013	4480
EP MARINA-RIVER BED DN.	013-018	1390
EP1 - North Marina	Ponar	3300
EP2 - Mid Marina	Ponar	9900
EP3 - South Marina	Ponar	5100
EPN (new site)	Ponar	nm
EPM-N	Eckman	nm
S11-EPM Upland	Ponar	nm
S11D- EPM Upland Dup.	Ponar	nm
EPM-1 (S11-EPM Upland)	Eckman	nm
S12-EPM Mid	Ponar	nm
EPM-2 (S12-EPM Mid)	Eckman	nm
EPM2-dup (S12- EPM Upla	Eckman	nm
S13-EPM South	Ponar	nm
EPM-3 (S13-EPM South)	Eckman	nm
34P EPSC DOCK	PONAR	nm
35P EPSC-Inlet	PONAR	nm
35PC2	PONAR	nm
20 C1 EPSC-Inlet	000-083	1620
20 C1	083-088	1890
49E EPSC	Eckman	10000
36P Monsanto Lagoon	PONAR	1320
19 C1 Monsanto Bay	000-053	2150
19 C1	053-085	1380
19 C2 Monsanto Bay	000-051	2780
19 C2	051-085	3010
CHRYSLER BAY-INNER	000-030	<50
CHRYSLER BAY-INNER	030-058	<50
CHRYSLER BAY-INNER	058-079	<50
CHRYSLER BAY-OUTER	000-013	348
CHRYSLER BAY-OUTER	013-061	<50
37P Chry Bay Marsh Inlet	PONAR	nm
39P Swan Island-North	PONAR	454
39P Above Humbug Marina	PONAR	238
S9 - Chrysler Bay	Ponar	2000
CELERON Island	000-043	<50
CELERON Island	043-074	<50
CELERON Island	074-107	<50

grain size

TRENTON CHANNEL PROJECT		SIEVE						HYDROMETER			ATTERBERG LIMITS		
SEDIMENT CHEMISTRY RESULTS		% PASSING						%PASSING FINE					
SITE DESCRIPTION	Core length	GRAVEL	GRAVEL	MED SAND	FINE SAND	FINE SAND	VF SAND	SILT	SILT	CLAY			
	cm	4.75mm	2	0.5	0.25	0.125	0.075	0.05	0.005	0.002	LIQUID LIM	PLASTIC LIM	PLASTICITY INDEX
43P Portofino Slip	PONAR	97.5	50.2	50.3	44.3	41.9	18.5	12.6					
42P Pt Hennepin	PONAR	30.3	44.9	42.5	33.5	30	13.8	10					
15 C1 T.C. North Marsh	000-022	98.1	95.7	98.6	79.4	77.1	41	28.8					
15 C1	022-062	99.2	98.8	98	96.7	94.5	51	38.5					
15 C1	062-100	99	97.6	95	93	90	59	53.5					
45P Firestone Steel	PONAR	34.3	30.5	79.7	59.7	64.5	20.5	12.5					
MONGUAGON CREEK-UPSTREAM	000-030	100	100	99.9	98.7	94.6	94.7	73.5	29.5	16.1	[illegible]	33.1	30.1
MONGUAGON CREEK-UPSTREAM	030-104	100	99.5	95.5	94.8	92.7	99.3	85	43.5	27.2	[illegible]	40.7	26.7
MONGUAGON CREEK-UPSTREAM	104-142	97	94.3	90.7	99.1	98.9	94.3	60	45	26	[illegible]	38.3	27.5
MONGUAGON CREEK-UPSTREAM	000-030	100	99.6	98.5	97.4	91.6	78.3	67.2	24.5	14.5	[illegible]	33	26.6
MONGUAGON CREEK-UPSTREAM	030-076	100	99.9	99	97.8	92.4	84.4	72.2	25.5	14.2	[illegible]	33	63.5
MONGUAGON CREEK-UPSTREAM	076-150	100	99.8	98.5	98	96.9	94.9	90.9	45.9	22	[illegible]	37	33.4
MONGUAGON CREEK-UPSTREAM	150-160	59	56.2	42.1	39.1	36.8	35.1	30.5	10.9	6	[illegible]	38.2	28.3
25 C1 MNCK DNS-Nearshore	000-027	99.5	98.6	95.4	97.7	64.7	60.7	50.6					
25 C1	027-051	100	99.3	97.1	91.9	73.8	68.8	57.7					
25 C1	051-095	99.8	99.2	98.8	90.9	73	62.8	51.7					
25 C1	095-132	99.5	99.4	98.4	95.3	67.6	60.4	49.1					
21 C1 MNCK DNS-Offshore	000-027	94.8	77.9	68.8	53.5	58.9	33.8	22.5					
21 C1	027-051	80.3	71	60.4	54	50	27	19					
MONGUAGON CREEK-DOWN	000-150	100	100	99.7	99.4	98	95.6	90.1	45.5	28	71.4	37.4	34
MONGUAGON CREEK-DOWN	150-168	100	100	99.6	99.3	98.1	95.5	88.5	48.9	28.9	[illegible]	38.5	29.9
BLACK LAGOON-CENTER	000-030	100	99.9	98.9	98.2	98.9	93	98.1	14.2	5.5	[illegible]	37.8	24.9
BLACK LAGOON-CENTER	030-120	100	99.9	83.9	82.3	82.1	81.9	68	13	3.5	[illegible]	50.6	23.1
BLACK LAGOON-CENTER	120-210	100	100	93.9	93.5	93.3	92.7	84.5	18.5	4	[illegible]	45	22.7
BLACK LAGOON-CENTER	210-229	99.9	99.6	99.7	78.5	45.6	39	29	13.5	7		NONPLASTIC	
BLACK LAGOON-LOWER	000-080	100	100	98.3	95.7	94.5	90.7	78.1	14.5	4	[illegible]	43.5	15.2
BLACK LAGOON-LOWER	080-152	100	100	99.9	99.7	98	93.9	81	34.5	16	[illegible]	39.5	19.5
BLACK LAGOON-LOWER	152-203	100	100	98.5	96.9	93.4	87.5	84.2	47.8	23	[illegible]	42.6	12
BLACK LAGOON-EAST	000-055	99.7	98.2	92.8	97.7	53.8	34.5	25.5	7.5	4.1		NONPLASTIC	
BLACK LAGOON-EAST	055-103	100	99.8	97.6	59.9	50	28.7	23.5	7.2	6		NONPLASTIC	
BLACK LAGOON-EAST	103-166	99.6	99.3	97.7	94.2	82.1	34.7	25	9.8	6.5		NONPLASTIC	
BLACK LAGOON-EAST	166-229	99.9	99.7	98.8	94	55.6	35.9	25.5	10.5	7.5		NONPLASTIC	
BLACK LAGOON-EAST	000-035	99.3	98.6	97.3	93.4	58	38	27	8.9	6.9		NONPLASTIC	
BLACK LAGOON-EAST	035-133	99.9	99.6	97.6	91.6	55.6	32.3	23	9	7.5		NONPLASTIC	
BLACK LAGOON-EAST	133-182	100	99.9	99.6	98.4	49	32.9	29	7.9	5.9		NONPLASTIC	
24 C1 BLLG-Nearshore	000-030	98.5	97.8	96.5	93.5	68.5	17.9	10					
24 C1 (WWES Lab)	030-075	99.7	99.6	99.5	99.3	52	19	6.5					
41P NE of Rouge R "18"	PONAR	97.5	35.2	39.4	79.2	70	22.5	12.2					

TRENTON CHANNEL PROJECT				SEM:AVS>1	
SEDIMENT CHEMISTRY RESULTS				Metals	Sulfide
		AVS/SEM ANALYSIS		Presumed	buffering
SITE DESCRIPTION				Available	capacity
	Core				
	length	umol/g	umol/g		umol/g
	in cm	TOTAL METALS	SULFIDE	SEM:AVS	AVS-SEM
43P Portofino Slip	PONAR	100.6	5.5	18.3	
42P Pt. Hennepin	PONAR	49.8	6	8.3	
15 C1 T.C. North Marsh	000-022	88.3	3.8	23.2	
15 C1	022-062	93.7	<0.05		
15 C1	062-100	118.9	<0.05		
45P Firestone Steel	PONAR	302.4	73	4.1	
MONGUAGON CREEK-UPSTREAM	000-030	12.3	356.8	0.03	344.5
MONGUAGON CREEK-UPSTREAM	030-104	34.8	448.9	0.08	414.1
MONGUAGON CREEK-UPSTREAM	104-142	21.8	349.0	0.06	327.2
MONGUAGON CREEK-UPSTREAM	000-030	10.9	299.1	0.04	288.2
MONGUAGON CREEK-UPSTREAM	030-076	16.3	316.9	0.05	300.6
MONGUAGON CREEK-UPSTREAM	076-150	30.0	236.1	0.13	206.1
MONGUAGON CREEK-UPSTREAM	150-180	10.9	215.5	0.05	204.6
S5 - Monguagon Creek	Ponar	11.59	10.8	1.07	
FI - Fighting Island	Ponar	1.02	0.39	2.61	
25 C1 MNCK DNS-Nearshore	000-027	145.05	7	20.7	
25 C1	027-051	175.83	4.3	40.9	
25 C1	051-095	225.12	9.7	23.2	
25 C1	095-132	386.88	6	64.5	
21 C1 MNCK DNS-Offshore	000-027	94	<0.05		
21 C1	027-051	64.7	0.97	66.7	
MONGUAGON CREEK-DOWN	000-150	29.3	211.9	0.14	182.6
MONGUAGON CREEK-DOWN	150-168	33.0	142.5	0.23	109.5
BLACK LAGOON-CENTER	000-030	43.5	1189.0	0.04	1145.5
BLACK LAGOON-CENTER	030-120	31.3	719.1	0.04	687.8
BLACK LAGOON-CENTER	120-210	23.3	234.5	0.10	211.2
BLACK LAGOON-CENTER	210-229	5.4	88.6	0.06	83.2
BLACK LAGOON-LOWER	000-060	32.1	136.4	0.24	104.3
BLACK LAGOON-LOWER	060-152	16.1	128.4	0.13	112.3
BLACK LAGOON-LOWER	152-203	12.8	138.1	0.09	125.3
BLACK LAGOON-EAST	000-055	0.8	8.5	0.09	7.7
BLACK LAGOON-EAST	055-103	0.4	8.8	0.05	8.4
BLACK LAGOON-EAST	103-166	0.5	8.8	0.06	8.3
BLACK LAGOON-EAST	166-229	0.5	0.4	1.25	-0.1
BLACK LAGOON-EAST	000-035	0.5	7.3	0.07	6.8
BLACK LAGOON-EAST	035-133	0.5	4.7	0.11	4.2
BLACK LAGOON-EAST	133-182	0.5	1.3	0.38	0.8
24 C1 BLLG-Nearshore	000-030	252.8	55	4.6	
24 C1 (WWES Lab)	030-075	646.7	409	1.6	
S7 - Black Lagoon	Ponar	20.16	18.1	1.11	

TRENTON CHANNEL PROJECT		%TOTAL ORG.	DENSITY	DENSITY
SEDIMENT CHEMISTRY RESUL	Core length	CARBON	LB/FT3	LB/FT3
	cm	DRY BASIS	WET	DRY
SEL (Persaud et.. al. OME, 1993)		10		
55C1 Allied Oil Slip NW	000-030	2.9		
	030-091	3.2		
	091-152	3.4		
	152-218	2		
55C2 Allied Oil Slip NW	000-030	3		
	030-091	2.1		
	091-147	2.1		
56C1 Nickelson South Sl	000-030	2		
	030-043	1.7		
56C2 Nickelson South Sli	000-030	3		
	030-091	1.9		
	091-152	1.9		
	152-201	1.7		
59C1 Stenson Club	000-030	3.4		
	030-091	2.8		
	091-152	2.2		
	152-213	2.7		
	213-224	2		
64P Mud Island Northsid	Ponar	2.2		
65P Mud Island SW	Ponar	1.7		
60C1 Mud Island -South	000-030	2.2		
	030-091	2.3		
	091-137	2		
53C1 Grassy Island NW	000-030	3		
	030-071	0.74		
54C1 Grassy Island NE	000-034	1.8		
63P Grassy Island W	Ponar	2		
61P Grassy Isalnd SW	Ponar	1.6		
62P Grassy Island SE	Ponar	2.5		
57P Mouth of Ecorse Cre	Ponar	3		
58C1 Mouth of Ecorse Cr	000-030	1.1		
52C1 BASF Northworks low	000-030	1.3		
	030-091	1.6		
	091-152	3.2		
	152-213	1		
	213-218	0.9		

TRENTON CHANNEL PROJECT SEDIMENT CHEMISTRY RESUL	Core length cm	%TOTAL ORG. CARBON DRY BASIS	DENSITY LB/FT3 WET	DENSITY LB/FT3 DRY
SEL (Persaud et. al. OME, 1993)		10		
21 C1 MNCK DNS-Offshore	000-027	1.18	95.9	92
21 C1	027-051	0.85	94.2	90.9
MONGUAGON CREEK-DOWN	000-150	6.58	100.8	48.8
MONGUAGON CREEK-DOWN	150-168	7.11	107.3	53.9
BLACK LAGOON-CENTER	000-030	5.22	141.7	55.4
BLACK LAGOON-CENTER	030-120	6.88	104.3	35.3
BLACK LAGOON-CENTER	120-210	6.94	113.6	45.8
BLACK LAGOON-CENTER	210-229	3.88	115.6	81.3
BLACK LAGOON-LOWER	000-060	6.96	92.9	39.7
BLACK LAGOON-LOWER	060-152	5.34	107.6	54.6
BLACK LAGOON-LOWER	152-203	4.84	102.2	52.2
BLACK LAGOON-EAST	000-055	0.82	128.2	102.5
BLACK LAGOON-EAST	055-103	0.57	119.5	94.3
BLACK LAGOON-EAST	103-166	0.6	118.9	92.5
BLACK LAGOON-EAST	166-229	1.18	116.1	90.8
BLACK LAGOON-EAST	000-035	0.7	171.3	137.2
BLACK LAGOON-EAST	035-133	0.66	116.4	91.5
BLACK LAGOON-EAST	133-182	0.94	115.4	89.9
24 C1 BLLG-Nearshore	000-030	4.64	100	100
24 C1 (WWES Lab)	030-075	4.87	100	99.9
47E BLLG	Eckman	4		
S7 - Black Lagoon	Ponar	5.1		
40P East of Bouy N "6"	PONAR			
41P NE of Bouy R "18"	PONAR	4.11	100	99.7
ELIZABETH PARK CANAL	000-079	5.93	94.6	46.4
ELIZABETH PARK CANAL	079-180	4.81	86.8	46.5
ELIZABETH PARK CANAL	180-260	5.79	72.9	37.6
ELIZABETH PARK CANAL	260-330	3.91	124.7	66.8
16 C1 EPNC-Upper	000-080	4.19	100	99.7
16 C1	080-120	4.77	100	100
16 C1	120-157	4.29	100	99.9
17 C1 EPNC-Inner	000-040	4.6	97.3	97.2
17 C1	040-080	3.83	100	100
17 C1	080-140	2.91	99.9	99.9
17 C1	140-175	4.63	100	99.4
18 C1 EPNC-Lower	000-055	3.95	100	99.8
18 C1	055-125	4.44	100	100
18 C1	125-170	3.81	100	100
18 C1	170-217	2.38	100	99.9
46E EPNC	Eckman	4.4		
EP1 - North Marina	Ponar	2.8		
EP2 - Mid Marina	Ponar	6		
EP3 - South Marina	Ponar	5.3		

TRENTON CHANNEL PROJECT				
SEDIMENT CHEMISTRY RESULTS			Collection Method/	
SITE DESCRIPTION	Latitude	Longitude	Agency	Estimated Accuracy
55C1 Allied Oil Slip NW	N 42 15 37	W 83 07 29	Mapping Software	+/- 150ft.
55C2 Allied Oil Slip NW - d	N 42 15 37	W 83 07 29	Mapping Software	+/- 150ft.
56C1 Nickelson South Slip	N 42 15 32	W 83 07 43	Loran	+/- 150ft.
56C2 Nickelson South Slip -d	N 42 15 32	W 83 07 44	Loran	+/- 150ft.
59C1 Stenson Club	N 42 14 36	W 83 08 55	Loran	+/- 150ft.
64P Mud Island Northside	N 42 14 4160	W 83 08 3987	Ashtech diff corr	+/- 5ft
65P Mud Island SW	N 42 14 1282	W 83 08 6581	Ashtech diff corr	+/- 5ft
60C1 Mud Island -South side	N 42 14 2701	W 83 08 5673	Ashtech diff corr	+/- 5ft
53C1 Grassy Island NW	N 42 13 6828	W 83 08 1324	Ashtech diff corr	+/- 5ft
54C1 Grassy Island NE	N 42 13 7018	W 83 08 0533	Ashtech diff corr	+/- 5ft
63P Grassy Island W	N 42 13 3979	W 83 08 1478	Ashtech diff corr	+/- 5ft
61P Grassy Isalnd SW	N 42 13 1423	W 83 08 2095	Ashtech diff corr	+/- 5ft
62P Grassy Island SE	N 42 13 1010	W 83 08 1283	Ashtech diff corr	+/- 5ft
57P Mouth of Ecorse Creek	N 42 13 94	W83 08 82	Loran	+/- 150ft.
58C1 Mouth of Ecorse Creek	N 42 13 94	W83 08 82	Loran	+/- 150ft.
52C1 BASF Northworks lower	N 42 12 7136	W 83 08 5514	Ashtech diff corr	+/- 5ft
69C1 Wyandotte Yatch Club	N 42 12 44	W 83 08 73	Loran	+/- 150ft.
68P N of Pt. Hennepin	N 42 12 35	W 83 08 27	Loran	+/- 150ft.
68E N of Pt. Hennepin	N 42 12 35	W 83 08 27	Loran	+/- 150ft.
67C1 Portofino	N 43 11 73	W83 09 00	Loran	+/- 150ft.
43P Portofino Slip	N 42 11 50	W 83 08 57	Mapping Software	+/- 150ft.
42P Pt. Hennepin	N 42 11 48	W 83 08 47	Mapping Software	+/- 150ft.
15 C1 T.C. North Marsh	N 42:10:26	W 83:09:29	Mapping Software	+/- 150ft.
51 C 1 Firestone upper	N 42 10 7916	W 83 09 5462	Ashtech diff corr	+/- 5ft
66C1 Firestone Steel -Mid (	N 42 10 56	W 83 09 60	Ashtech diff corr	+/- 5ft
45P Firestone Steel	N 42 10 23	W 83 09 55	Mapping Software	+/- 150ft.
50P Firestone lower	N 42 10 6264	W 83 09 6997	Ashtech diff corr	+/- 5ft

TRENTON CHANNEL PROJECT				
SEDIMENT CHEMISTRY RESULTS			Collection Method/	
SITE DESCRIPTION	Latitude	Longitude	Agency	Estimated Accuracy
EP MARINA - OUTSIDE	N 42:07:47.15	W 83:10:35.47	Trimble-USEPA LLRS	+/- 1 meter
EP MARINA - UPLAND	N 42:07:46.28	W 83:10:36.91	Trimble-USEPA LLRS	+/- 1 meter
EP MARINA - RIVER BED UP.	N 42:07:44.29	W 83:10:37.60	Trimble-USEPA LLRS	+/- 1 meter
EP MARINA - RIVER BED DN.	N 42:07:42.83	W 83:10:39.41	Trimble-USEPA LLRS	+/- 1 meter
EP1 - North Marina	(231691.73)	(13446002.56)	ArcView-photo	+/- 2 ft.
EP2 - Mid Marina	(231498.13)	(13445947.77)	ArcView-photo	+/- 2 ft.
EP3 - South Marina	(231304.52)	(13445858.27)	ArcView-photo	+/- 2 ft.
EPN (new site)	(231830.54)	(13446000.74)	ArcView-photo	+/- 2 ft.
EPM-N	(231830.54)	(13446000.74)	ArcView-photo	+/- 2 ft.
S11-EPM Upland	(231691.73)	(13446002.56)	ArcView-photo	+/- 2 ft.
S11D- EPM Upland Dup.	(231691.73)	(13446002.56)	ArcView-photo	+/- 2 ft.
EPM-1 (S11-EPM Upland)	(231691.73)	(13446002.56)	ArcView-photo	+/- 2 ft.
S12-EPM Mid	(231498.13)	(13445947.77)	ArcView-photo	+/- 2 ft.
EPM-2 (S12-EPM Mid)	(231691.73)	(13446002.56)	ArcView-photo	+/- 2 ft.
EPM2-dup (S12- EPM Upland)	(231691.73)	(13446002.56)	ArcView-photo	+/- 2 ft.
S13-EPM South	(231304.52)	(13445858.27)	ArcView-photo	+/- 2 ft.
EPM-3 (S13-EPM South)	(231304.52)	(13445858.27)	ArcView-photo	+/- 2 ft.
34P EPSC DOCK	N 42:07:16	W 83:10:55	Mapping Software	+/- 150ft.
35P EPSC-Inlet	N 42:07:13	W 83:10:47	Mapping Software	+/- 150ft.
35PC2	N 42:07:13	W 83:10:47	Mapping Software	+/- 150ft.
20 C1 EPSC-Inlet	N 42:07.213	W 83:10.818	Hand Held GPS-MDNR	+/- 100 ft.
49E EPSC	N 42 07 19	W 83 11 05	Loran	+/- 150ft.
36P Monsanto Lagoon	N 42 07 03	W 83 10 57	Mapping Software	+/- 150ft.
19 C1 Monsanto Bay	N 42:07.000	W 83:10.881	Hand Held GPS-MDNR	+/- 100 ft.
19 C2 Monsanto Bay	N 42:07.000	W 83:10.881	Hand Held GPS-MDNR	+/- 100 ft.
CHRYSLER BAY-INNER	N 42:06:49.26	W 83:11:06.68	Trimble-USEPA LLRS	+/- 1 meter
CHRYSLER BAY-OUTER	N 42:06:47.91	W 83:11:02.65	Trimble-USEPA LLRS	+/- 1 meter
37P Chry Bay Marsh Inlet	N 42 06 49	W 83 11 06	Mapping Software	+/- 150ft.
39P Swan Island-North	N 42 06 10	W 83 10 28	Mapping Software	+/- 150ft.
38P Above Humbug Marina	N 42 06 03	W 83 11 22	Mapping Software	+/- 150ft.
S9 - Chrysler Bay	N 42 06 50	W 83 11 02	Mapping Software	+/- 150ft.
CELERON ISLAND	N 42:04:45.36	W 83:10:29.20	Trimble-USEPA LLRS	+/- 1 meter

DATA RESULTS Classification - Upstream to Downstream

Classification of Contaminated Sediment Sites as applied to the Trenton Channel Sediment Survey Results 1993-1998

Summed Exceedances

Not-impacted <1 < Impacted < 15 < Moderately Impacted < 30 < Severely Contaminated < 60 < Extremely Contaminated

Location Index	Trenton Channel Project Sediment Results SITE DESCRIPTION	Core length in cm	CLASSIFICATION	BIO + TOX EXCEEDANCE TOTAL	BIO Exceedance	Tox Exceedance	EXCEEDANCES (x over guidelines) Toxics Metals	Organics	Bioaccum PCBs	Hg
15	69C1 Wyandotte Yacht Club	000-030	Severely Contaminated	33.7	21.0	12.7	5.8	7.0	10.0	11.0
15.1	69C1 Wyandotte Yacht Club	030-066	Severely Contaminated	32.6	20.4	12.3	5.3	6.9	5.4	15.0
15.15										
16	68P N of Pt. Hennepin	Ponar	Impacted	2.1	0.7	1.4	1.0	0.4	0.0	0.7
16.5										
17	68E N of Pt. Hennepin	Eckman	Impacted	2.1	0.8	1.3	1.1	0.1	0.0	0.8
17.5										
18	67C1 Portofino	000-030	Moderately Contaminated	24.5	13.2	11.3	6.3	5.1	5.7	7.5
18.5										
19	43P Portofino Slip	PONAR	Impacted	8.9	3.2	5.7	4.6	1.1	0.0	3.2
19.5										
20	42P Pt. Hennepin	PONAR	Impacted	4.4	2.2	2.2	1.9	0.3	0.0	2.2
20.5										
21	15 C1 T.C. North Marsh	000-022	Impacted	2.0	0.0	2.0	2.0	0.0	0.0	0.0
21.1	15 C1 T.C. North Marsh	022-082	Impacted	1.8	0.0	1.8	1.8	0.0	0.0	0.0
21.2	15 C1 T.C. North Marsh	082-100	Impacted	2.1	0.0	2.1	2.1	0.0	0.0	0.0
21.5										
22	51 C 1 Firestone upper	000-030	Extremely Contaminated	203.0	185.8	17.2	8.9	8.3	55.8	130.0
22.1	51 C 1 Firestone upper	030-091	Extremely Contaminated	214.4	188.2	26.2	12.5	13.7	28.2	160.0
22.2	51 C 1 Firestone upper	091-152	Extremely Contaminated	225.9	203.0	22.8	10.6	12.2	43.0	160.0
22.3	51 C 1 Firestone upper	152-194	Extremely Contaminated	130.8	111.3	19.5	8.4	11.1	16.3	95.0
22.5										
23	66C1 Firestone Steel -Mid (45P site	000-030	Extremely Contaminated	201.8	175.1	26.7	11.9	14.8	15.1	160.0
23.1	66C1 Firestone Steel -Mid (45P site	030-091	Extremely Contaminated	130.5	111.7	18.9	9.2	9.7	11.7	100.0
23.2	66C1 Firestone Steel -Mid (45P site	091-104	Severely Contaminated	48.0	31.0	17.0	6.6	10.4	2.0	29.0
23.5										
24	45P Firestone Steel	PONAR	Extremely Contaminated	118.9	103.3	15.6	10.0	5.6	3.3	100.0
24.1	45P Firestone Steel	PONAR	Extremely Contaminated	82.3	71.7	10.7	10.7	0.0	6.7	65.0
24.5										
25	50P Firestone lower	Ponar	Extremely Contaminated	135.6	110.4	25.3	13.4	11.8	10.4	100.0
25.5										
27	MONGUAGON CREEK-UPSTREA	000-030	Severely Contaminated	48.1	31.3	16.9	11.6	5.2	7.3	24.0
27.1	MONGUAGON CREEK-UPSTREA	030-104	Extremely Contaminated	65.3	19.6	45.7	18.1	27.6	7.6	12.0
27.2	MONGUAGON CREEK-UPSTREA	104-142	Extremely Contaminated	163.5	132.9	30.5	14.6	15.9	33.9	99.0
27.5										
28	MONGUAGON CREEK-UPSTREA	000-030	Severely Contaminated	47.9	31.4	16.5	10.5	6.0	6.4	25.0
28.1	MONGUAGON CREEK-UPSTREA	030-076	Extremely Contaminated	92.8	64.0	28.8	14.1	14.7	30.0	34.0
28.2	MONGUAGON CREEK-UPSTREA	076-150	Extremely Contaminated	91.7	60.4	31.3	16.8	14.5	29.4	31.0
28.3	MONGUAGON CREEK-UPSTREA	150-180	Extremely Contaminated	103.9	87.3	16.6	8.2	8.4	30.3	57.0
28.5										
29	48E Monguagon Creek	Eckman	Moderately Contaminated	29.9	7.5	22.4	13.6	8.9	4.6	2.9
29.5										
30	S5 - Monguagon Creek	Ponar	Severely Contaminated	40.1	18.7	21.4	11.3	10.1	18.7	0.0
30.5										
31	FI - Fighting Island	Ponar	Impacted	1.6	0.2	1.3	1.2	0.1	0.2	0.0
31.5										
32	25 C1 MNCK DNS-Nearshore	000-027	Moderately Contaminated	20.3	11.0	9.3	8.3	1.0	0.0	11.0
32.1	25 C1 MNCK DNS-Nearshore	027-051	Moderately Contaminated	19.2	9.5	9.7	9.4	0.3	0.0	9.5
32.2	25 C1 MNCK DNS-Nearshore	051-095	Moderately Contaminated	29.3	18.3	11.1	10.6	0.5	3.3	15.0
32.3	25 C1 MNCK DNS-Nearshore	095-132	Severely Contaminated	36.2	17.5	18.7	18.0	0.7	3.5	14.0
32.5										
33	21 C1 MNCK DNS-Offshore	000-027	Impacted	1.2	0.0	1.2	1.2	0.0	0.0	0.0
33.1	21 C1 MNCK DNS-Offshore	027-051	Impacted	3.8	2.3	1.5	1.5	0.0	0.0	2.3
33.5										
34	MONGUAGON CREEK-DOWN	000-150	Extremely Contaminated	77.3	56.9	20.4	17.5	2.9	17.9	39.0
34.1	MONGUAGON CREEK-DOWN	150-188	Extremely Contaminated	173.1	147.3	25.9	20.6	5.2	37.3	110.0
34.5										

DATA RESULTS. Classification - Upstream to Downstream

Classification of Contaminated Sediment Sites as applied to the Trenton Channel Sediment Survey Results 1993-1996

Summed Exceedances

Not-impacted <1 < Impacted < 15 < Moderately Impacted < 30 < Severely Contaminated < 60 < Extremely Contaminated

	Trenton Channel Project	Core		BIO + TOX			EXCEEDANCES (x over guidelines)			
Location	Sediment Results	length		EXCEEDANCE	BIO	Tox	Toxics		Bioaccum	
Index	SITE DESCRIPTION	in cm	CLASSIFICATION	TOTAL	Exceedance	Exceedance	Metals	Organics	PCBs	Hg
59	33P EPC Bridge 5	PCNAR	Moderately Contaminated	21.4	11.6	9.7	9.3	0.4	2.5	9.1
59.5										
60	EP MARINA - OUTSIDE	000-020	Impacted	1.7	0.0	1.7	1.7	0.0	0.0	0.0
60.5										
61	EP MARINA - UPLAND	000-006	Impacted	1.6	0.0	1.6	1.6	0.0	0.0	0.0
61.5										
62	EP MARINA - RIVER BED UP	000-010	Severely Contaminated	48.9	34.2	14.8	10.0	4.8	4.2	30.0
62.1	EP MARINA - RIVER BED UP	010-020	Extremely Contaminated	65.0	46.3	18.7	10.4	8.2	4.3	42.0
62.2	EP MARINA - RIVER BED UP	020-028	Extremely Contaminated	79.9	57.9	22.0	11.7	10.3	5.9	52.0
62.3	EP MARINA - RIVER BED UP	028-038	Extremely Contaminated	61.5	48.1	13.4	12.7	0.7	5.1	43.0
62.5										
63	EP MARINA - RIVER BED DN.	000-013	Severely Contaminated	51.2	40.0	11.2	7.1	4.1	0.0	40.0
63.1	EP MARINA - RIVER BED DN.	013-018	Severely Contaminated	50.0	40.0	10.0	7.7	2.3	0.0	40.0
63.5										
65	EP1 - Upland (S11)	Ponar	Moderately Contaminated	15.3	3.8	11.4	7.9	3.5	3.8	0.0
65.5										
66	EP2 - Mid Marina (S12)	Ponar	Moderately Contaminated	25.7	8.0	17.7	10.8	7.0	8.0	0.0
66.5										
67	EP3 - South Marina (S13)	Ponar	Moderately Contaminated	20.2	4.8	15.4	10.1	5.3	4.8	0.0
67.5										
68	EPN (new site)	Ponar	Severely Contaminated	59.2	44.0	15.2	14.8	0.4	0.0	44.0
68.05										
68.1	EPM-N	Eckman	Moderately Contaminated	23.8	15.0	8.8	8.7	0.1	0.0	15.0
68.5										
69	S11-EPM Upland	Ponar	Severely Contaminated	31.4	23.0	8.4	8.1	0.3	0.0	23.0
69.1	S11D- EPM Upland Dup.	Ponar	Severely Contaminated	31.2	23.0	8.2	8.0	0.2	0.0	23.0
69.15										
69.2	EPM-1 (S11-EPM Upland)	Eckman	Moderately Contaminated	27.0	18.0	9.0	8.9	0.1	0.0	18.0
69.5										
69.5										
70	S12-EPM Mid	Ponar	Severely Contaminated	40.0	29.0	11.0	10.4	0.6	0.0	29.0
70.05										
70.1	EPM-2 (S12-EPM Mid)	Eckman	Moderately Contaminated	25.6	16.0	9.6	9.2	0.4	0.0	16.0
70.15										
70.2	EPM2-dup (S12- EPM Upland)	Eckman	Moderately Contaminated	26.2	17.0	9.2	9.2	0.0	0.0	17.0
70.25										
71	S13-EPM South	Ponar	Severely Contaminated	40.9	31.0	9.9	9.3	0.5	0.0	31.0
71.05										
71.1	EPM-3 (S13-EPM South)	Eckman	Severely Contaminated	45.3	38.0	7.3	6.4	0.9	0.0	38.0
71.15										
72	34P EPSC DOCK	PCNAR	Severely Contaminated	30.8	18.5	12.3	11.9	0.4	2.5	18.0
72.5										
73	35P EPSC-Inlet	PONAR	Moderately Contaminated	22.5	12.0	10.5	10.1	0.4	0.0	12.0
73.1	35P EPSC-Inlet	PCNAR	Moderately Contaminated	19.7	10.0	9.7	9.3	0.4	0.0	10.0
73.15										
74	20 C1 EPSC-Inlet	000-083	Extremely Contaminated	62.2	47.3	14.9	13.2	1.7	7.3	40.0
74.1	20 C1 EPSC-Inlet	083-088	Extremely Contaminated	72.1	55.0	17.0	14.8	2.3	4.0	51.0
74.15										
74.2	49E EPSC	Eckman	Moderately Contaminated	23.7	9.6	14.1	7.0	7.1	0.0	9.6
74.25										
75	36P Monsanto Lagoon	PONAR	Severely Contaminated	57.3	41.7	15.6	14.5	1.1	2.7	39.0
75.5										
77	19 C1 Monsanto Bay	000-053	Severely Contaminated	50.1	37.6	12.5	10.6	1.9	1.6	36.0
77.1	19 C1 Monsanto Bay	053-085	Severely Contaminated	51.7	42.5	9.2	7.8	1.4	3.5	39.0
77.15										
77.2	19 C2 Monsanto Bay	000-051	Severely Contaminated	51.7	40.3	11.5	9.2	2.2	7.3	33.0
77.3	19 C2 Monsanto Bay	051-085	Severely Contaminated	45.9	36.2	9.8	7.1	2.6	4.2	32.0
77.35										
78	CHRYSLER BAY-INNER	000-030	Impacted	3.1	2.0	1.1	1.1	0.0	0.0	2.0
78.1	CHRYSLER BAY-INNER	030-058	Impacted	1.5	0.0	1.5	1.5	0.0	0.0	0.0
78.2	CHRYSLER BAY-INNER	058-079	Impacted	1.7	0.0	1.7	1.7	0.0	0.0	0.0
78.25										
79	CHRYSLER BAY-OUTER	000-013	Moderately Contaminated	27.9	20.4	7.5	6.4	1.1	5.4	15.0
79.1	CHRYSLER BAY-OUTER	013-081	Impacted	1.9	0.0	1.9	1.9	0.0	0.0	0.0
79.15										
80	37P Chry Bay Marsh Inlet	PONAR	Impacted	4.6	1.8	2.8	2.8	0.0	0.0	1.8
80.5										
81	39P Swan Island-North	PONAR	Impacted	7.5	3.8	3.7	3.1	0.6	0.0	3.8
81.5										
82	38P Above Humbug Marina	PONAR	Moderately Contaminated	15.7	8.7	7.0	6.8	0.2	0.0	8.7
82.5										
83	S9 - Chrysler Bay	Ponar	Impacted	14.1	4.2	9.9	7.9	2.0	4.2	0.0
83.5										
84	CELERON ISLAND	000-043	Impacted	3.1	1.6	1.5	1.4	0.1	0.0	1.6
84.1	CELERON ISLAND	043-074	Impacted	1.5	0.0	1.5	1.5	0.0	0.0	0.0
84.2	CELERON ISLAND	074-107	Impacted	1.6	0.0	1.6	1.6	0.0	0.0	0.0

DATA RESULTS Classification - Most Contaminated to Least Contaminated

Classification of Contaminated Sediment Sites as applied to the Trenton Channel Sediment Survey Results 1993-1996

Summed Exceedances

Not-impacted <1 < Impacted < 15 < Moderately Impacted < 30 < Severely Contaminated < 40 < Extremely Contaminated

Location Index	Trenton Channel Project Sediment Results SITE DESCRIPTION	Core length in cm	CLASSIFICATION	BIO + TOX EXCEEDANCE TOTAL	BIO Exceedance	Tox Exceedance	EXCEEDANCES (x over guidelines) Toxics Metals	Organics	Bioaccum PCBs	Hg
68	EPN (new site)	Ponar	Severely Contaminated	59.2	44.0	15.2	[illegible]	0.4	0.0	44.0
52.1	18 C1 EPNC-Lower	055-125	Severely Contaminated	57.9	48.0	9.9	[illegible]	0.9	2.0	48.0
3.2	59C1 Stenson Club	030-091	Severely Contaminated	57.8	29.5	28.4	10.4	17.9	21.2	9.3
75	36P Monsanto Lagoon	PONAR	Severely Contaminated	57.3	41.7	15.8	14.5	1.1	2.7	39.0
38.2	BLACK LAGOON-LOWER	152-203	Severely Contaminated	57.1	48.0	9.1	[illegible]	1.8	0.0	48.0
3.1	59C1 Stenson Club	000-030	Severely Contaminated	56.3	29.0	27.4	[illegible]	18.0	21.7	7.3
77.2	19 C2 Monsanto Bay	000-051	Severely Contaminated	51.7	40.3	11.5	[illegible]	2.2	7.3	33.0
77.1	19 C1 Monsanto Bay	053-085	Severely Contaminated	51.7	42.5	9.2	[illegible]	1.4	3.5	39.0
63	EP MARINA - RIVER BED DN.	000-013	Severely Contaminated	51.2	40.0	11.2	[illegible]	4.1	0.0	40.0
50.1	18 C1 EPNC-Upper	080-120	Severely Contaminated	50.2	40.0	10.2	[illegible]	1.4	0.0	40.0
77	19 C1 Monsanto Bay	000-053	Severely Contaminated	50.1	37.6	12.5	[illegible]	1.9	1.6	38.0
63.1	EP MARINA - RIVER BED DN.	013-018	Severely Contaminated	50.0	40.0	10.0	[illegible]	2.3	0.0	40.0
2.4	56C2 Nickelson South Slip -dup	030-091	Severely Contaminated	49.5	25.3	24.2	[illegible]	2.7	24.6	0.7
62	EP MARINA - RIVER BED UP	000-010	Severely Contaminated	48.9	34.2	14.8	10.0	4.8	4.2	30.0
3.4	59C1 Stenson Club	152-213	Severely Contaminated	48.8	33.8	15.0	[illegible]	8.4	3.8	30.0
27	MONGUAGON CREEK-UPSTREAM	000-030	Severely Contaminated	48.1	31.3	16.9	[illegible]	5.2	7.3	24.0
23.2	66C1 Firestone Steel -Mid (45P site)	091-104	Severely Contaminated	48.0	31.0	17.0	[illegible]	10.4	2.0	29.0
28	MONGUAGON CREEK-UPSTREAM	000-030	Severely Contaminated	47.9	31.4	16.5	10.5	6.0	6.4	25.0
77.3	19 C2 Monsanto Bay	051-085	Severely Contaminated	45.9	30.2	9.8	[illegible]	2.6	4.2	32.0
71.1	EPM-3 (S13-EPM South)	Eckman	Severely Contaminated	45.3	38.0	7.3	[illegible]	0.9	0.0	38.0
39.1	24 C1 BLLG-Nearshore	030-075	Severely Contaminated	43.0	19.6	23.4	[illegible]	2.5	7.6	12.0
40	24 C1 BLLG-Nearshore	030-075	Severely Contaminated	43.0	13.0	30.0	[illegible]	0.1	0.0	13.0
52.2	18 C1 EPNC-Lower	125-170	Severely Contaminated	42.9	28.2	14.7	[illegible]	7.6	4.2	24.0
39	24 C1 BLLG-Nearshore	000-030	Severely Contaminated	42.2	17.0	25.2	[illegible]	4.9	5.0	12.0
49.1	ELIZABETH PARK CANAL	079-160	Severely Contaminated	41.7	23.0	18.7	10.1	8.8	0.0	23.0
50.2	18 C1 EPNC-Upper	120-157	Severely Contaminated	40.9	29.2	11.6	[illegible]	2.0	1.2	28.0
71	S13-EPM South	Ponar	Severely Contaminated	40.9	31.0	9.9	[illegible]	0.5	0.0	31.0
30	S5 - Monguagon Creek	Ponar	Severely Contaminated	40.1	18.7	21.4	[illegible]	10.1	18.7	0.0
70	S12-EPM Mid	Ponar	Severely Contaminated	40.0	29.0	11.0	10.4	0.8	0.0	29.0
42	S7 - Black Lagoon	Ponar	Severely Contaminated	40.0	14.4	25.6	[illegible]	9.3	14.4	0.0
49.3	ELIZABETH PARK CANAL	260-330	Severely Contaminated	38.9	24.0	14.9	[illegible]	6.2	0.0	24.0
35	BLACK LAGOON-CENTER	000-030	Severely Contaminated	37.2	14.0	23.2	[illegible]	4.5	0.0	14.0
32.3	25 C1 MNCK DNS-Nearshore	095-132	Severely Contaminated	36.2	17.5	18.7	[illegible]	0.7	3.5	14.0
58	32P EPC Bridge 4	PONAR	Severely Contaminated	36.0	25.5	10.6	[illegible]	0.2	16.7	8.8
51.1	17 C1 EPNC-Inner	040-080	Severely Contaminated	35.4	26.0	9.4	[illegible]	1.7	0.0	26.0
2.6	56C2 Nickelson South Slip -dup	152-201	Severely Contaminated	35.1	15.7	19.4	[illegible]	8.2	8.6	9.1
3.5	59C1 Stenson Club	213-224	Severely Contaminated	34.7	25.4	9.3	[illegible]	5.4	4.4	21.0
15	69C1 Wyandotte Yacht Club	000-030	Severely Contaminated	33.7	21.0	12.7	[illegible]	7.0	10.0	11.0
49.2	ELIZABETH PARK CANAL	160-260	Severely Contaminated	32.8	15.0	17.8	[illegible]	10.6	0.0	15.0
15.1	69C1 Wyandotte Yacht Club	030-066	Severely Contaminated	32.6	20.4	12.3	[illegible]	6.9	5.4	15.0
14.1	52C1 BASF Northworks lower	030-091	Severely Contaminated	31.6	16.9	14.7	[illegible]	7.7	3.9	13.0
69	S11-EPM Upland	Ponar	Severely Contaminated	31.4	23.0	8.4	[illegible]	0.3	0.0	23.0
69.1	S11D- EPM Upland Dup.	Ponar	Severely Contaminated	31.2	23.0	8.2	[illegible]	0.2	0.0	23.0
14.2	52C1 BASF Northworks lower	091-152	Severely Contaminated	31.1	16.3	14.8	[illegible]	7.9	1.3	15.0
72	34P EPSC DOCK	PONAR	Severely Contaminated	30.8	18.5	12.3	[illegible]	0.4	2.5	16.0
53	46E EPNC	Eckman	Severely Contaminated	30.5	20.2	10.3	[illegible]	2.4	5.2	15.0

DATA RESULTS: Classification - Most Contaminated to Least Contaminated

Classification of Contaminated Sediment Sites as applied to the Trenton Channel Sediment Survey Results 1993-1996
Summed Exceedances
Not-impacted <1 < Impacted < 15 < Moderately Impacted < 30 < Severely Contaminated < 60 < Extremely Contaminated

	Trenton Channel Project	Core		BIO + TOX			EXCEEDANCES (x over guidelines)			
Location	Sediment Results	length		EXCEEDANCE	BIO	Tox	Toxics		Bioaccum	
Index	SITE DESCRIPTION	in cm	CLASSIFICATION	TOTAL	Exceedance	Exceedance	Metals	Organics	PCBs	Hg
5.1	65P Mud Island SW	Ponar	Impacted	14.3	8.1	8.2	[illegible]	3.2	2.9	3.3
83	S9 - Chrysler Bay	Ponar	Impacted	14.1	4.2	9.9	7.9	2.0	4.2	0.0
45	44P DNS from Bouy R "28"	PONAR	Impacted	13.8	5.5	7.3	7.3	0.0	3.0	5.5
48	28P Deadhead Cove	PONAR	Impacted	13.8	7.0	6.8	4.6	0.2	3.0	7.0
46	26P Riverside Hospital	PONAR	Impacted	13.5	5.8	7.9	7.4	0.5	0.0	5.6
48.1	28PC2	PONAR	Impacted	13.4	5.7	5.7	[illegible]	0.2	0.0	5.7
55	29P EPC Bridge 1	PONAR	Impacted	12.1	4.0	8.1	[illegible]	0.0	0.0	4.0
11	62P Grassy Island SE	Ponar	Impacted	10.2	4.6	5.6	[illegible]	2.2	1.3	3.3
10	61P Grassy Isalnd SW	Ponar	Impacted	9.8	5.1	4.6	[illegible]	2.1	1.2	3.9
19	43P Portofino Slip	PONAR	Impacted	8.9	3.2	5.7	4.8	1.1	0.0	3.2
6.1	60C1 Mud Island -South side	000-030	Impacted	8.2	5.5	2.8	[illegible]	1.3	3.2	2.3
44	41P NE of Bouy R "18"	PONAR	Impacted	8.2	4.0	4.2	[illegible]	0.5	1.7	2.3
6.2	60C1 Mud Island -South side	030-091	Impacted	8.1	6.6	1.5	[illegible]	0.0	4.9	1.7
81	38P Swan Island-North	PONAR	Impacted	7.5	3.8	3.7	[illegible]	0.6	0.0	3.8
7	53C1 Grassy Island NW	000-030	Impacted	6.3	3.3	3.0	[illegible]	0.1	0.0	3.3
8	54C1 Grassy Island NE	000-034	Impacted	5.5	3.4	2.0	[illegible]	0.2	1.8	1.6
6.3	60C1 Mud Island -South side	091-137	Impacted	5.4	3.9	1.5	[illegible]	0.0	3.1	0.8
13	58C1 Mouth of Ecorse Creek	000-030	Impacted	5.3	3.4	1.9	[illegible]	0.0	3.4	0.0
4.1	64P Mud Island Northside	Ponar	Impacted	5.2	1.3	3.8	[illegible]	1.4	0.5	0.8
9	63P Grassy Island W	Ponar	Impacted	4.8	1.4	3.4	[illegible]	1.4	0.0	1.4
80	37P Chry Bay Marsh Inlet	PONAR	Impacted	4.6	1.8	2.8	[illegible]	0.0	0.0	1.9
20	42P Pt. Hennepin	PONAR	Impacted	4.4	2.2	2.2	1.9	0.3	0.0	2.2
43	40P East of Bouy N "8"	PONAR	Impacted	4.3	1.8	2.5	[illegible]	0.2	0.0	1.8
56	30P EPC Bridge 2	PONAR	Impacted	3.9	1.8	2.1	[illegible]	0.0	0.0	1.8
33.1	21 C1 MNCK DNS-Offshore	027-051	Impacted	3.8	2.3	1.5	1.5	0.0	0.0	2.3
84	CELERON ISLAND	000-043	Impacted	3.1	1.6	1.5	1.4	0.1	0.0	1.6
78	CHRYSLER BAY-INNER	000-030	Impacted	3.1	2.0	1.1	[illegible]	0.0	0.0	2.0
21.2	15 C1 T.C. North Marsh	062-100	Impacted	2.1	0.0	2.1	[illegible]	0.0	0.0	0.0
17	68E N of Pt. Hennepin	Eckman	Impacted	2.1	0.8	1.3	[illegible]	0.1	0.0	0.8
16	66P N of Pt. Hennepin	Ponar	Impacted	2.1	0.7	1.4	1.0	0.4	0.0	0.7
21	15 C1 T.C. North Marsh	000-022	Impacted	2.0	0.0	2.0	[illegible]	0.0	0.0	0.0
79.1	CHRYSLER BAY-OUTER	013-061	Impacted	1.9	0.0	1.9	[illegible]	0.0	0.0	0.0
7.1	53C1 Grassy Island NW	030-071	Impacted	1.8	0.3	1.5	[illegible]	0.2	0.0	0.3
21.1	15 C1 T.C. North Marsh	022-062	Impacted	1.8	0.0	1.8	[illegible]	0.0	0.0	0.0
78.2	CHRYSLER BAY-INNER	058-079	Impacted	1.7	0.0	1.7	[illegible]	0.0	0.0	0.0
60	EP MARINA - OUTSIDE	000-020	Impacted	1.7	0.0	1.7	[illegible]	0.0	0.0	0.0
84.2	CELERON ISLAND	074-107	Impacted	1.6	0.0	1.6	[illegible]	0.0	0.0	0.0
31	FI - Fighting Island	Ponar	Impacted	1.6	0.2	1.3	[illegible]	0.1	0.2	0.0
61	EP MARINA - UPLAND	000-008	Impacted	1.6	0.0	1.6	[illegible]	0.0	0.0	0.0
84.1	CELERON ISLAND	043-074	Impacted	1.5	0.0	1.5	[illegible]	0.0	0.0	0.0
78.1	CHRYSLER BAY-INNER	030-058	Impacted	1.5	0.0	1.5	[illegible]	0.0	0.0	0.0
33	21 C1 MNCK DNS-Offshore	000-027	Impacted	1.2	0.0	1.2	[illegible]	0.0	0.0	0.0
38.2	BLACK LAGOON-EAST	133-182	Non-Impacted	0.9	0.0	0.9	[illegible]	0.0	0.0	0.0
37	BLACK LAGOON-EAST	000-055	Non-Impacted	0.8	0.0	0.8	[illegible]	0.0	0.0	0.0
37.3	BLACK LAGOON-EAST	166-229	Non-Impacted	0.8	0.0	0.8	[illegible]	0.0	0.0	0.0
37.2	BLACK LAGOON-EAST	103-166	Non-Impacted	0.7	0.0	0.7	0.7	0.0	0.0	0.0
38.1	BLACK LAGOON-EAST	035-133	Non-Impacted	0.7	0.0	0.7	0.7	0.0	0.0	0.0
37.1	BLACK LAGOON-EAST	055-103	Non-Impacted	0.7	0.0	0.7	0.7	0.0	0.0	0.0
38	BLACK LAGOON-EAST	000-035	Non-Impacted	0.7	0.0	0.7	0.7	0.0	0.0	0.0

Appendix B. Sediment Survey Results-Data Tables

- Metals
- PCBs
- PAHs
- Oil and Grease
- Grain Size
- ~~Acid Volatile Sulfi~~des
- ~~TOC, Density~~
- ~~Lat-Long~~
- ~~Classification A~~: Upstream to Downstream
- ~~Classification B:~~ Most Contaminated to Least Contaminated

FROM
"RESULTS OF THE TRENTON CHANNEL PROJECT
SEDIMENT SURVEYS 1993-1996."

July 1997

by Art Ostazewski
MDEQ
SWQD
USEPA-GLNPO Grant #GL995960-R-0

metals

TRENTON CHANNEL PROJECT		HEAVY METALS mg/kg										
SEDIMENT CHEMISTRY RESULTS	Core											
	length	%										
SITE DESCRIPTION	in cm	SOLIDS	TOT. As	TOT Cd	TOT. Cr	TOT. Cu	TOT. Fe	TOT. Pb	TOT. Mn	TOT. Hg	TOT. Ni	TOT. Zn
ERM (Long and Morgan, 1990)			35	9.6	145	390		110				
SEL (Persuad et. al. OME, 1993)							40000		1100	1.3	50	270
Quantification Level (EPA Method 245.1/7470.7471)										0.1		
51 C 1 Firestone upper	000-030	43	3.4	10	150	140	30000	200	410	13	30	490
	030-091	53	13	15	230	300	32000	300	470	16	130	660
	091-152	51	12	13	190	250	26000	260	430	16	34	570
	152-194	48	13	10	140	190	25000	180	410	9.5	70	460
66C1 Firestone Steel -Mid (45P site)	000-030	43	12	15	260	300	31000	240	550	16	100	590
	030-091	54	11	15	140	210	25000	190	420	10	57	520
	091-104	57	8.2	10	58	190	18000	160	310	2.9	39	470
45P Firestone Steel	PONAR	45	7.6	11	165	199	44000	180	733	10	76	592
	PONAR	47	13	11	166	221	41000	211	574	6.5	36.8	662
50P Firestone lower	Ponar	42	9.4	19	250	150	35000	260	500	10	130	790
MONGUAGON CREEK-UPSTREAM	000-030	41	8.5	40	118	140	37500	140	590	2.4	68	563
MONGUAGON CREEK-UPSTREAM	030-104	47	9.9	20	467	246	44100	333	551	1.2	210	864
MONGUAGON CREEK-UPSTREAM	104-142	53	11	14	303	217	41500	333	520	9.9	160	721
MONGUAGON CREEK-UPSTREAM	000-030	41	7.8	33	109	118	38800	149	569	2.5	70	458
MONGUAGON CREEK-UPSTREAM	030-076	43	8.1	21	248	183	45900	277	546	3.4	160	625
MONGUAGON CREEK-UPSTREAM	076-150	47	8.9	22	500	255	42900	352	554	3.1	160	525
MONGUAGON CREEK-UPSTREAM	150-180	60	12	7.6	170	122	24400	212	476	5.7	73	377
48E Monguagon Creek	Eckman	48	7.4	6.2	77	70	22000	150	440	0.29	64	2300
55 - Monguagon Creek	Ponar	58	nm	11.2	178	123	45900	179	655	<0.1	103	850
FI - Fighting Island	Ponar	33	nm	nd	21	14	14200	nd	236	<0.1	17	12
25 C1 MNCK DNS-Nearshore	000-027	70	6.1	29	78	91	27700	115	429	1.1	46	412
25 C1	027-051	61	6.5	30	99	101	28900	142	484	0.95	56	449
25 C1	051-095	58	5.7	15	167	131	35700	213	486	1.5	90	648
25 C1	095-132	71	9	17	405	239	48300	302	542	1.4	251	887
21 C1 MNCK DNS-Offshore	000-027	90	3.5	<0.05	9.2	14	14100	9.1	251	<0.1	15	34
21 C1	027-051	44	3.9	<0.05	13	15	14900	17	285	0.23	17	50
MONGUAGON CREEK-DOWN	000-150	48	8.5	18	437	252	42000	340	556	3.9	200	878
MONGUAGON CREEK-DOWN	150-168	50	10	22	456	281	51700	424	632	11	210	1200
BLACK LAGOON-CENTER	000-030	38	6.5	14	102	99	53200	193	746	1.4	49	3090
BLACK LAGOON-CENTER	030-120	34	9	17	345	218	70100	449	1070	3.1	160	1720
BLACK LAGOON-CENTER	120-210	40	22	11	162	236	112000	439	1640	6.8	90	1030
BLACK LAGOON-CENTER	210-229	75	4.9	3.7	45	99	19800	76	330	1.4	41	225
BLACK LAGOON-LOWER	000-060	42	24	12	191	226	137000	574	2060	5.6	100	1340
BLACK LAGOON-LOWER	060-152	51	10	11	183	247	35800	187	488	7.8	72	554
BLACK LAGOON-LOWER	152-203	54	10	9.8	121	166	29000	118	397	4.8	56	444
BLACK LAGOON-EAST	000-055	81	8.1	<0.050	9.8	5.2	7430	3.9	148	<0.1	8.5	27
BLACK LAGOON-EAST	055-103	80	1.9	<0.050	8.6	3.7	8150	3.4	173	<0.1	7.1	17
BLACK LAGOON-EAST	103-166	78	2.3	<0.050	9.6	5.6	7260	4.1	162	<0.1	7.9	17
BLACK LAGOON-EAST	166-229	80	2.6	0.067	9.7	7	7480	3.9	175	<0.1	8.6	23
BLACK LAGOON-EAST	000-035	80	1.8	<0.050	9	4.7	6840	3.6	128	<0.1	7.6	26
BLACK LAGOON-EAST	035-133	77	1.9	<0.050	9.3	4.2	7190	3.6	161	<0.1	7.9	21
BLACK LAGOON-EAST	133-182	76	3.2	<0.050	11	8.6	8380	4	201	<0.1	9.5	29
24 C1 BLLG-Nearshore	000-030	40	7.1	16	121	110	53300	218	743	1.2	58	3320
24 C1 (WES Lab)	030-075	32	7.3	11	315	200	57000	337	827	1.2	144	2410
24 C1 BLLG-Nearshore (MDNR Lab)	030-075	32	12	30	418	233	76500	468	1100	1.3	206	3200
47E BLLG	Eckman	35	7	9.9	88	96	43000	160	620	11	52	1300
57 - Black Lagoon	Ponar	55	nm	9.7	156	111	73000	254	873	<0.1	71	2060

PCBS

TRENTON CHANNEL PROJECT
SEDIMENT CHEMISTRY RESULTS

SITE DESCRIPTION	Core Length in cm	TOT. PCB	PCBs SCAN mg/kg d.w. PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254	PCB-1260
ERM (Long and Morgan, 1990)		0.4							
Quantification Level (EPA Method 608/8081)		0.33							
15 C1 T.C. North Marsh	000-022		<0.33	<0.42	<0.33	<0.33	<0.33	<0.33	<0.33
15 C1	022-062		<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
15 C1	062-100		<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
51 C 1 Firestone upper	000-030	13.40					3.2	1.8	13.4
	030-091	9.31					4.39	1.95	2.97
	091-152	14.20					4.55	2.6	7.05
	152-194	5.39					2.96	2.43	< 0.33
66C1 Firestone Steel -Mid (45P si	000-030	4.99					1.96	1.36	1.67
	030-091	3.85					1.31	0.89	1.65
	091-104	0.65					< 0.33	0.18	0.47
45P Firestone Steel	PONAR	1.10	<4.4	<1.2	<4.4	<4.4	<4.4	<0.33	1.10
	PONAR	2.20	<1.1	<1.1	<1.1	<1.1	<1.1	2.20	<1.1
45PC2	PONAR	2.56	<1.1	<1.1	<1.1	<1.1	<1.1	1.70	0.87
50P Firestone lower	Ponar	3.43					1.26	1.31	0.86
MONGUAGON CREEK-UPSTREAM	000-030	2.4	<2.0	<1.3	<1.3	<2.0	<2.0	<2.6	2.4
MONGUAGON CREEK-UPSTREAM	030-104	2.5	<2.9	<2.9	<2.9	<2.9	<2.9	<2.9	2.5
MONGUAGON CREEK-UPSTREAM	104-142	11.2	<1.3	<1.3	<1.3	<1.3	5.7	5.5	<1.3
MONGUAGON CREEK-UPSTREAM	000-030	2.1	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	2.1
MONGUAGON CREEK-UPSTREAM	030-076	9.9	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	9.9
MONGUAGON CREEK-UPSTREAM	076-150	9.7	<2.8	<5.6	<2.8	<2.8	4.9	<4.8	4.8
MONGUAGON CREEK-UPSTREAM	150-180	10	<2.2	<4.4	<2.2	<2.2	5.7	4.3	<3.9
48E Monguagon Creek	Eckman	1.52							1.52
55 - Monguagon Creek	Ponar	5.18							
FI - Fighting Island	Ponar	0.08							
25 C1 MNCK DNS-Nearshore	000-027		<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
25 C1	027-051		<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
25 C1	051-095	1.08	<0.33	<0.33	<0.33	<0.33	0.36	<0.33	0.72
25 C1	095-132	1.15	<0.33	<0.33	<0.33	<0.33	0.58	<0.33	0.57
21 C1 MNCK DNS-Offshore	000-027		<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
21 C1	027-051		<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
MONGUAGON CREEK-DOWN	000-150	5.9	<0.33	<2.8	<0.33	<0.33	2.3	<5.5	3.6
MONGUAGON CREEK-DOWN	150-168	12.3	<0.33	<5.3	<0.33	<0.33	9.6	<7.2	2.7
BLACK LAGOON-CENTER	000-030	0	<8.91	<8.91	<8.91	<8.91	<8.91	<8.91	<8.91
BLACK LAGOON-CENTER	030-120	5.5	<2.0	<2.0	<2.0	<2.0	2.4	<3.9	4.1
BLACK LAGOON-CENTER	120-210	1.8	<1.1	<1.1	<1.1	<1.1	<1.1	1.8	<1.1
BLACK LAGOON-CENTER	210-229	0	<0.44	<1.3	<0.44	<0.44	<0.44	<0.44	<0.44
BLACK LAGOON-LOWER	000-060	2.8	<3.2	<3.2	<3.2	<3.2	<3.2	2.8	<1.3
BLACK LAGOON-LOWER	060-152	0	<4.0	<5.2	<4.0	<4.0	<4.0	<2.7	<1.3
BLACK LAGOON-LOWER	152-203	0	<1.7	<1.7	<2.5	<1.7	<1.7	<1.7	<0.81
BLACK LAGOON-EAST	000-055	0	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
BLACK LAGOON-EAST	055-103	0	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
BLACK LAGOON-EAST	103-166	0	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
BLACK LAGOON-EAST	166-229	0	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
BLACK LAGOON-EAST	000-035	0	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
BLACK LAGOON-EAST	035-133	0	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
BLACK LAGOON-EAST	133-182	0	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
24 C1 BLLG-Nearshore	000-030	1.64	<0.42	<2.8	<0.42	0.81	<0.42	0.83	<0.42
24 C1 (WES Lab)	030-075	2.50	<0.51	<0.51	<0.51	<0.51	1.10	<0.51	1.40
24 C1 BLLG-Nearshore (MDNR Lab)	030-075								
47E BLLG	Eckman	3.27					1.2	0.92	1.15
57 - Black Lagoon	Ponar	4.75							

TRENTON CHANNEL PROJECT SEDIMENT CHEMISTRY RESULTS			acenaphthene	acenaphthylene	anthracene	benzo(a)anthracene	benzo(b&k)fluoranthene	benzo(a)pyrene	benzo(g,h,i)perylene	chrysene	dibenzo(a,h)anthracene	fluoranthene	fluorene	indendo(1,2,3-cd)pyrene	napthalene	phenanthrene	pyrene
ERM Long and Morgan, 1990)		35															
			PAH SCAN														
SITE DESCRIPTION	ore Length in cm	TOT PAHS	mg/kg d.w. A1	A2	A3	B1	B2	B3	B4	C1	D1	F1	F2	I1	N1	P1	P2
69C1 Wyandotte Yatch Club	000-030	33.44			0.94	2.9	4.7	2.4	1.6	3.4		5.3		1.6	1.2	3.8	5.7
	030-066	32.14			0.87	2.8	4.6	2.4	1.4	3.3		5.1		1.6	1.2	3.4	5.5
68P N of Pt. Hennepin	Ponar	12.29				1	1.8	1.1	0.7	1.2		1.8		0.72	0.68	1.3	2
68E N of Pt. Hennepin	Eckman	4.88				0.68		0.6		0.7		1.1				0.69	1.1
67C1 Portofino	000-030	14.3				1.2	2.5	1.3	1	1.6		2.1		1		1.3	2.3
43P Portofino Slip	PONAR	6.99	<0.33	<0.33	<0.33	0.61	1.3	<0.33	<0.3	0.8	<0.33	1.5	<0.33	0.42	<0.33	0.98	1.4
42P Pt. Hennepin	PONAR	1.14	<0.33	<0.33	<0.33	<0.33	0.3	<0.33	<0.3	<0.3	<0.33	<0.33	<0.33	<0.33	<0.33	0.44	0.7
15 C1 T.C. North Marsh	000-022	0	<0.33	<0.33	<0.33	<0.33	0.3	<0.33	<0.3	<0.3	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
15 C1	022-062	0	<0.33	<0.33	<0.33	<0.33	0.3	<0.33	<0.3	<0.3	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
15 C1	062-100	0	<0.33	<0.33	<0.33	<0.33	0.3	<0.33	<0.3	<0.3	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
51 C 1 Firestone upper	000-030	34.36			1.8	2.6	3.6	2.1	1.2	3.1		4.1	0.85	1.4	3	5.8	4.8
	030-091	36.69			1.5	2.6	3.5	1.9	1.1	2.9		3.5	0.85	1.2	6.5	4.9	6.2
	091-152	53.5	0.9		2.5	3.9	5.5	2.9	1.1	4.2		4.5	1.7	1.5	8.4	8	8.4
	152-194	38.85			1.4	3.2	4.5	2.4	1.3	3.4		3.1	0.85	1.4	5.9	4.8	6.6
66C1 Firestone Steel -Mid (	000-030	28.5			1.2	2.5	2.7	1.8	0.8	3.1		4.4	0.8	0.91	2.1	3.7	4.5
	030-091	34.66			1.4	2.9	4.3	2.4	1	3.4		5	1.1	1.1	2.7	4.6	4.8
	091-104	85.51	0.73	1	3.6	8.6	11	7.6	3.5	9.3	0.92	11	1.2	2.7	2.4	9.3	13
50P Firestone lower	Ponar	204.2	2.9		4.3	17	28	12	4.6	18	1.9	36	2.7	7.9	2.1	32	35
MONGUAGON CREEK-UPSTREAM	000-030	13.4	<0.41	<0.41	<0.41	1.1	2.1	1.1	1	1.5	<0.41	2	<0.41	0.71	0.52	1.3	2.1
MONGUAGON CREEK-UPSTREAM	030-104	5.6	<0.36	<0.36	<0.36	0.51	0.8	0.4	0.4	0.7	<0.36	0.97	<0.36	<0.36	<0.36	0.81	1.1
MONGUAGON CREEK-UPSTREAM	104-142	7.3	<0.33	<0.33	<0.33	0.59	0.8	0.4	0.3	0.8	<0.33	1.2	<0.33	<0.33	0.54	1.2	1.4
MONGUAGON CREEK-UPSTREAM	000-030	8.8	<0.41	<0.41	<0.41	0.91	1.5	0.9	0.7	1	<0.41	1.3	<0.41	0.51	<0.41	0.81	1.3
MONGUAGON CREEK-UPSTREAM	030-076	9.1	<0.39	<0.39	<0.39	0.87	1.4	0.8	0.6	1	<0.39	1.5	<0.39	0.47	<0.39	0.98	1.5
MONGUAGON CREEK-UPSTREAM	076-150	2.7	<0.36	<0.36	<0.36	<0.36	0.5	<0.36	<0.3	0.4	<0.36	0.61	<0.36	<0.36	<0.36	0.5	0.66
MONGUAGON CREEK-UPSTREAM	150-180	3.4	<0.33	<0.33	<0.33	0.33	0.6	<0.33	<0.3	0.5	<0.33	0.66	<0.33	<0.33	<0.33	0.69	0.67
48E Monguagon Creek	Eckman	100.37		1.1	2.8	11	19	9.3	2.7	9.4	1.3	14	0.97	4.9	3.1	6.3	15
55 - Monguagon Creek	Ponar	218.4															
FI - Fighting Island	Ponar	0															
25 C1 MNCK DNS-Nearshore	000-027	7.82	<0.33	<0.33	<0.33	0.77	0.8	0.9	0.5	0.9	<0.33	1.4	<0.33	0.47	<0.33	0.85	1.3
25 C1	027-051	8.39	<0.33	<0.33	<0.33	0.75	1.1	0.8	0.5	0.9	<0.33	1.5	<0.33	0.41	<0.33	0.85	1.4
25 C1	051-095	6.31	<0.33	<0.33	<0.33	0.62	0.9	0.6	0.4	0.7	<0.33	1.2	<0.33	<0.33	<0.33	0.73	1.2
25 C1	095-132	3.58	<0.33	<0.33	<0.33	0.39	0.4	<0.33	<0.3	0.4	<0.33	0.83	<0.33	<0.33	<0.33	0.53	0.99
21 C1 MNCK DNS-Offshore	000-027	0	<0.33	<0.33	<0.33	<0.33	0.3	<0.33	<0.3	<0.3	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
21 C1	027-051	0	<0.33	<0.33	<0.33	<0.33	0.3	<0.33	<0.3	<0.3	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
MONGUAGON CREEK-DOWN	000-150	9.1	<0.35	<0.35	<0.35	0.71	1.2	0.6	0.4	1	<0.35	1.5	<0.35	<0.35	0.53	1.4	1.7
MONGUAGON CREEK-DOWN	150-168	4.2	<0.33	<0.33	<0.33	0.36	0.6	<0.33	<0.3	0.5	<0.33	0.78	<0.33	<0.33	0.34	0.84	0.82
BLACK LAGOON-CENTER	000-030	7.5	<0.44	<0.44	<0.44	0.73	1.3	0.7	0.7	1	<0.44	1.2	<0.44	<0.44	<0.44	0.65	1.3
BLACK LAGOON-CENTER	030-120	10.9	<0.49	<0.49	<0.49	0.85	1.5	0.7	0.7	1.5	<0.49	1.8	<.49	<0.49	<0.49	1.8	2
BLACK LAGOON-CENTER	120-210	19.1	<0.42	<0.42	0.58	1.4	1.8	0.9	0.7	2.1	<0.42	3.1	0.63	0.48	0.8	3.2	3.5
BLACK LAGOON-CENTER	210-229	15.1	<0.33	<0.33	0.51	1.7	2.1	1.3	0.8	1.7	<0.33	2.4	<0.33	0.63	<0.33	1.4	2.6

RIVERVIEW GROUNDWATER DATA

Well #	concentration (ppb) 8/00 sampling date			
	Mercury	PCB's	ammonia	cyanide
MW-A	2.1		7980	780
MW-B	19	3.74	12300	2910
MW-C	1.3		3450	5650
MW-D	919	6.04	28600	9560
MW-E	341		6950	1490
MW-G	.3		5060	185
MW-H	1.5		9180	2810
MW-I	.8	.646	5610	510
MW-J	130		32000	2780
MW-K	39		58200	24800
IMW-01			470	39
IMW-05	99.6	4	8800	3300
IMW-06	487	14.3	33,400	9280
IMW-09	21.9		4100	1120
IMW-10	487	48.2	38300	15700
IMW-11	38.7		40100	5950
IMW-12	1.6	3.61	58700	16500
IMW-13	2320	4.35	95100	7620
Pz-1	1.6		4550	2100
Pz-2	14.7		10900	1330
Pz-3	3.4	6.55	1690	530
Pz-4	372	6.55	15800	2420
Pz-5	3.3	.391	13600	10300
Pz-6	18.1		2710	1180
BMW-1			670	158000

8/00 Results

Shallow /
ppb

	Mercury	PCB's	Cyanide	Lead	Ammonia
SMW-01	.3		450	<100	1,940
-02	1.8		1600	21	24,400
-03			35	54	580
-04	4.2		936	<100	10,800
-05	18.9	2.58	2,070	16	7,340
-06	540	11	9,720		33,800
-07			7000		760
-08					1,526
-09	17.4		690	100	2,370
-10	390	53.5	15,100	77	37,500
-11	40		12,400		50,000
-12	26.9		16,000	130	37,800
-13	450		2,720	<100	39,700
-14	1.1		62		890
-15	.3		NA		NA
-16				<100	380
-17			480	<100	6,050
-18				240	9,470
-19			27		3,940
-20	1,710	59.4	3,360	35	23,400
-21	.81		10		480
-22	26.9		6,440	97	78200
-23			850		8,290
-24	.9		686	<100	4,230
-25	.8		337	<100	1,530
-26	23.5		451	142	4,670
-27	[illegible]		[illegible]		

GROUNDWATER SAMPLING RESULTS
NOVEMBER 15, 2000
BASF SITE
RIVERVIEW, MICHIGAN

	SMW-5, run #1			SMW-5, run #2			SMW-6, run #1			SMW-6, run #2			SMW-10		
Chemical	Conc.	EMPC	Notes	Conc.	EMPC	Notes	Conc.	EMPC	Notes	Conc.	EMPC	Notes	Conc.	EMPC	Notes
2,3,7,8-TCDD		44.8		71.6			49.0			37.7			319		
1,2,3,7,8-PeCDD		131		115			97.3			103			579		
1,2,3,4,7,8-HxCDD	ND			109			99.7			120			264		
1,2,3,6,7,8-HxCDD	985			1270			425			486			4880		
1,2,3,7,8,9-HxCDD	397			561			337			343			2090		
1,2,3,4,6,7,8-HpCDD	12380			15640			7780			6480			81960		E
1,2,3,4,6,7,8,9-OCDD	81410		E	123200		E	52510		E	47180		E	326530		E
2,3,7,8-TCDF	405			443			621			807			1880		
1,2,3,7,8-PeCDF	ND			304			2290			482			ND		
2,3,4,7,8-PeCDF	ND			187			382			335			678		
1,2,3,4,7,8-HxCDF	262			416			910			947			1620		
1,2,3,6,7,8-HxCDF		74.3		127			239			252			476		
2,3,4,6,7,8-HxCDF	66.6			115			139			135			480		
1,2,3,7,8,9-HxCDF	ND			95.4			ND			62.6				68.5	X
1,2,3,4,6,7,8-HpCDF	270			410			644			808			1830		
1,2,3,4,7,8,9-HpCDF	76.8				84.1		126			167			162		
1,2,3,4,6,7,8,9-OCDF	403			529			830			759			1380		
Total TCDD	1710	1920		1800	1910		286	385		280	352		5060	5400	
Total PeCDD	189	738		313	594		319	746		317	674		2950	3950	
Total HxCDD	7990			10540			5200			6090			50730		
Total HpCDD	22250			29530			16570			13740			152270		
Total TCDF	5380	6250		1220	3670	X	6070	6360		3040	6260	X	8100	11740	
Total PeCDF	2950	3990		932	2020	X	4990	5140		1950	3270	X	4600	8080	
Total HxCDF	1690	1830		1530	1840	X	2610	2760		1800	2570	X	5970	7100	
Total HpCDF	643	734		916	1000		1300			1610	1680		2960	3110	

GROUNDWATER SAMPLING RESULTS
NOVEMBER 15, 2000
BASF SITE
RIVERVIEW, MICHIGAN

	SMW-13, run #1			SMW-13, run #2			SMW-20, run #1			SMW-20, run #2			DUP-1, run #1		
Chemical	Conc.	EMPC	Notes	Conc.	EMPC	Notes	Conc.	EMPC	Notes	Conc.	EMPC	Notes	Conc.	EMPC	Notes
2,3,7,8-TCDD		2.5	J	ND			~~ND~~			~~ND~~ 121				37.8	
1,2,3,7,8-PeCDD		5.7	J	ND			181				215		95.5		
1,2,3,4,7,8-HxCDD	ND				7.3	J	ND			348			68.8		
1,2,3,6,7,8-HxCDD	73.0			70.9			586			1440			749		
1,2,3,7,8,9-HxCDD	35.6		J	40.2		J	ND			1100			304		
1,2,3,4,6,7,8-HpCDD	1450			1370			72990		E	26770		E	9340		
1,2,3,4,6,7,8,9-OCDD	6760			5240			205370		E	172670		E	61700		E
2,3,7,8-TCDF	114			132			2920			2850			358		
1,2,3,7,8-PeCDF	ND			24.8		J	967				1690	X	ND		
2,3,4,7,8-PeCDF	ND			23.7		J	ND			849			163		
1,2,3,4,7,8-HxCDF	43.2		JB	41.5		J	ND			2930			255		
1,2,3,6,7,8-HxCDF	17.1		J	15.6		J	651			878				75.5	
2,3,4,6,7,8-HxCDF		13.7	J	15.2		J	ND			759			94.3		
1,2,3,7,8,9-HxCDF		3.2	JB	7.5		J	ND				133			63.1	
1,2,3,4,6,7,8-HpCDF	52.9			56.9			4030			3890				179	
1,2,3,4,7,8,9-HpCDF	ND			10.4		J	906			742			64.9		
1,2,3,4,6,7,8,9-OCDF	80.1		JB	42.5		J	5160			4570			460		
Total TCDD	80.5	97.9		83.1	95.8		1720	2340		330	695		1290	1470	
Total PeCDD	16.7	119			26.0		1040	1580		1510	2140		232	454	
Total HxCDD	543	580		637	644		10730			12810	12950		6390		
Total HpCDD	2530			2430			127110		E	51020		E	17200		
Total TCDF	508	652		482	770	X	27100	28890	E	9510	12240		5900	6410	
Total PeCDF	208	378		137	224	X	11600	11940		5830	7800	X	2690	3190	
Total HxCDF	179	212		166	184		9130	9260		8280	8610		1410	1600	
Total HpCDF	116			111			8190			7840	8060		344	523	

GROUNDWATER SAMPLING RESULTS
NOVEMBER 15, 2000
BASF SITE
RIVERVIEW, MICHIGAN

	DUP-1, run #2			Field Blank, run #1			Field Blank, run #2		
Chemical	Conc.	EMPC	Notes	Conc.	EMPC	Notes	Conc.	EMPC	Notes
2,3,7,8-TCDD	62.7			ND			ND		
1,2,3,7,8-PeCDD	115			ND			ND		
1,2,3,4,7,8-HxCDD	107			ND			ND		
1,2,3,6,7,8-HxCDD	2390			ND			ND		
1,2,3,7,8,9-HxCDD	888			ND			ND		
1,2,3,4,6,7,8-HpCDD	45150		E		0.68	J	ND		
1,2,3,4,6,7,8,9-OCDD	229590		E		9.2	J	7.5		J
2,3,7,8-TCDF	530			ND			ND		
1,2,3,7,8-PeCDF		858	X		1.2	J	ND		
2,3,4,7,8-PeCDF	184			ND			ND		
1,2,3,4,7,8-HxCDF	569			1.1		JB	ND		
1,2,3,6,7,8-HxCDF	151				0.24	J	ND		
2,3,4,6,7,8-HxCDF	111				0.92	JB	ND		
1,2,3,7,8,9-HxCDF	12.1		J	ND			ND		
1,2,3,4,6,7,8-HpCDF	782			1.2		J	ND		
1,2,3,4,7,8,9-HpCDF	101				0.32	J	ND		
1,2,3,4,6,7,8,9-OCDF	585				2.8	JB	ND		
Total TCDD	2820	2850		ND			ND		
Total PeCDD	717	1220		ND			ND		
Total HxCDD	20210				1.9		ND		
Total HpCDD	76610		E		0.68		ND		
Total TCDF	2370	5270	X	ND			ND		
Total PeCDF	1160	2770	X	0.47			ND		
Total HxCDF	2000	2490	X	1.1			ND		
Total HpCDF	1850	1950		1.2			ND		